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STUDIES IN ASEPTIC TECHNIC

WITH A REPORT OF SOME RECENT OBSERVATIONS AT THE ROOSEVELT HOSPITAL

GEORGE EMERSON BREWER, M.D.

NEW YORK

One of the most important duties of an attending surgeon to a hospital is to devise and carry out in his operative work, a system of aseptic technic which will insure the minimum of infection in his operative wounds.

Every infection occurring in a clean wound and every infected wound which is not rendered sterile by the primary operation, when this is possible, results in increased suffering and delay in convalescence to the patient and an increased expenditure of money, time, and effort on the part of the hospital and attending staff.

Take for instance the operation for the removal of a cancerous breast. Although this is often one of the most extensive operations in surgery, the wound should heal firmly in ten days and the patient should leave the hospital in a fortnight. If, however, through any error in technic the wound becomes infected, healing may be delayed for weeks or months, and the return to health and earning capacity of the patient may be indefinitely postponed. Each additional day that such a patient remains in the hospital as a result of infection, and every dollar that the hospital expends for his or her additional care should be recorded as a waste product. Moreover, the prolonged occupancy of a ward bed for such a reason often deprives other needy patients of the possibility of hospital care.

While accidental infections will occasionally occur even in the best regulated institutions, and while it is frequently impossible to render a given septic wound sterile by the most approved and skilful operative treatment, a conscientious surgeon by perfect technic and an ever vigilant watchfulness will reduce these unfortunate accidents to the minimum.

My interest in operative technic with a view to avoiding wound infection, dates back to the year 1895, when I began my first service as attending surgeon at the City Hospital. In a report[1] published the following May, I called attention to the fact that during an active service of six months, 39 per cent. of all clean operative wounds occurring in my service became infected. This report resulted in considerable unfavorable comment from many of my professional colleagues, one even going so far as to state that the report "never should have been published as it was a disgrace to the profession and would bring it into disrepute." I replied that to my mind the report possessed at least one merit and that was, that it was an absolutely truthful statement of the facts which had occurred during an honest effort to do clean surgery under most unfavorable conditions.

That the conditions were unfavorable was evidenced by the fact that there was not in the hospital during that period a single modern sterilizing autoclave, that the ligature and suture material was prepared in a wholly indifferent and unscientific manner and that neither the operating-room nurse nor any member of the house staff had had any training in modern aseptic methods.

A second report[2] was published one year later, after the hospital had been provided with two new modern operating-rooms and a complete modern sterilizing apparatus; and after an exhaustive bacteriologic examination of our methods and material had been made by the late Prof. Philip Hanson Hiss of Columbia University. During this year, the report stated, 9 per cent. of our clean wounds had become infected.

During the following year many changes in technic were made to bring about further improvement in our results. These were all described at length in a paper[3] read before the Suffolk Medical Society in Boston. In this report the use of dilute solutions of a 40 per cent. solution of formaldehyd for wound disinfection and dressings was advocated, and also the employment of sterile rubber gloves by all participating in the operation. During the period covered by this third report, the percentage of wound infections was reduced to 7.

Two years later a fourth and final report[4] was made of our studies in technic at this institution. This included a number of other changes in our methods with a careful investigation of several cases in which asepsis was lost as a result of our operative procedures. From a careful analysis of our results we were able to report that during our last year the percentage of infection in clean cases had been reduced to 3.2 per cent., which, at that time, compared favorably with the results in the other New York hospitals where the patients were recruited from those in the more fortunate walks of life, and were not the victims of starvation, alcoholism, and chronic disease which made up such a large percentage of those admitted to the wards of the City Hospital.

1. Brewer, George E.: Operative Surgery at the City Hospital with a Preliminary Report on the Study of Wound Infection, New York Med. Jour., May 2, 1896.

2. Brewer, George E.: Operative Surgery at the City Hospital with a Completed Report on the Study of Wound Infection, Med. Rec., New York, March 13, 1897.

3. Brewer, George E.: Med. Rec., New York, March 26, 1898.

4. Brewer, George E.: Studies in Surgical Technic with a Report on Operative Surgery at the City Hospital for 1898 and 1899, Med. News, Sept. 22, 1900.

During the progress of these studies I visited many of the larger and more important hospitals in this city and also in Boston, Baltimore, and Philadelphia, with a view to ascertaining the methods of hand and skin disinfection, sterilization of instruments, dressings and suture material, in use by the leading surgeons; also the operating-room technic and in general the results obtained. When obtaining permission of the attending surgeon to observe the preparation of the patients, the surgeons, and assistants, and for the making of ward visits when dressings were changed, the question generally was asked, "How much infection do you expect in clean cases?" The answer almost invariably was "practically none." Later conversations with members of the house staff and observations during ward visits led to the belief that while the "practically none" represented the honest opinion of the visiting surgeon, such an opinion was not based on accurate records. Indeed I am thoroughly convinced, that if I had been asked the same question at any time during the past ten years during which no effort was made to keep accurate records of infections occurring in my service, my off-hand estimate of the percentage of infection would fall far below the actual figures. In fact I am strongly of the opinion that the only way to obtain the best technical results is to keep an accurate record of infection in every patient submitted to operation, for it is only by this means that one can be kept aware of his technical transgressions.

It would be quite impossible for the modern student of technic to appreciate the difficulties which were encountered on every side, in the five years of constant effort to improve the technical results in an institution where the conditions were so unfavorable. During this period I was a constant observer and student of the methods being employed in the Syms operating-room by the late Dr. Charles McBurney, who established a standard of surgical technic in the Roosevelt Hospital which was equal if not superior to that of any other American or European clinic. Many of the changes made in our procedures at the City Hospital were the direct result of helpful consultations with Dr. McBurney who was always ready and willing to discuss the various problems presented and to give friendly and sound advice.

I have referred to these experiences in another hospital for the reason that I wish to call attention to the fact that in an institution where the patients as a rule were seriously handicapped by a low vital resistance due to malnutrition, dissipation, and disease, a somewhat exaggerated technic was necessary to obtain results comparable with those in other hospitals. Another important factor was that of air infection. At the City Hospital the air of the operating-rooms was constantly contaminated by floating germs, largely of the pus-producing varieties. This was frequently demonstrated by exposure of gelatin or agar plates in the operating-room during our surgical work. To overcome this source of infection, we found it necessary to cover all instrument trays, wash basins, irrigators, and pitchers with tents or covers of sterile muslin, and to employ irrigation of the wound during our operative procedures. It was only by these methods that our best results were obtained.

When, in 1899, I received an appointment as junior surgeon to the Roosevelt Hospital, I was surprised and gratified to see that many of the unusual technical procedures used in the City Hospital to meet the local conditions of that institution were unnecessary, and that even better results could be obtained by the somewhat simpler but equally effective technic employed by Dr. McBurney and my new chief, Dr. Robert F. Weir. While this was in part due to more perfect operating-room equipment and to a more thoroughly trained staff of assistants and nurses, the most important factor seemed to be the better physical condition of the patients.

During the first six years of service at the Roosevelt Hospital, while I acted as first assistant to Professor Weir, the number of clean wounds which became infected was exceedingly small, although no exact record was kept.

Shortly after I was appointed senior attending surgeon, a veritable storm of infection occurred, five clean wounds became infected as a result of operations (by both surgical divisions) in a single day, and the patients operated on in the succeeding few days also showed a high percentage of infections. One of these cases proved fatal. Two or three days after this outbreak of infection the hospital pathologist came to the operating-room just as we were about to begin our afternoon work. Cultures were taken from the gloves of all who were to participate in the operation, also from the gowns, caps, towels, sheets, sponges, instruments, ligature and suture material. Of twelve flasks of catgut and silk, eleven showed growth. All the other cultures remained sterile. It was thus clearly demonstrated that this wave of infection was directly due to some grave error in the preparation of our catgut. The person responsible for this was dismissed, the entire stock of contaminated gut was destroyed and the epidemic of infection was at an end.

A year or two later two cases of infection by the *Bacillus aerogenes capsulatus* occurred within a period of two or three days, one on the first and one on the second surgical division. Both cases proved fatal. A thorough investigation of our methods and material was made, including an elaborate series of tests of our steam sterilizers, which were of an old model, and had been in constant use for over fifteen years. While the source of the gas bacillus was never discovered, the investigation demonstrated a definite defect in our autoclaves. These were practically rebuilt and rendered in every way as efficient as any of the most modern design. Repeated bacteriologic tests since that time have demonstrated that our material is not only free from living bacteria, but also spore-free. For this valuable work, and also for many months of patient investigation on the preparation of our catgut, the hospital is indebted to Dr. Karl Connell of the attending surgical staff.

For some years, both before and after this investigation, our results seemed so satisfactory and the accidental infections so far apart that no special inquiry was made to ascertain the exact number or percentage.

During the early part of 1911, however, one or two unexplained infections occurred which led me to inaugurate on the first surgical division, a weekly report of every patient operated on, the condition of the wound area before operation, and the condition whether clean or infected at the first and subsequent dressings. This report was read at a staff conference, held every Friday morning after the ward visit; and any case of unexplained infection was referred to a committee to investigate, and to report at the next conference.

While the earliest reports of our investigations were not kept in permanent form, we have a complete list of these reports since Jan. 1, 1912.

The form in which these weekly reports was read was: First, the name of each patient with the clinical diagnosis; the anesthetic used; the operator; the condition of the wound area, clean, infected, or borderline; the condition of asepsis at the first or subsequent dressings, "maintained" or "lost" in clean cases, "established" or "unestablished" in the infected. At the end of the report a summary was given of which the following is an example.

Total number of operations for the week ending:

July 11, 1912	34
Wound area clean	16
Wound area infected	13
Borderline cases	5
Asepsis maintained in	16
Asepsis lost in	0
Asepsis established (in infected cases)	4
Asepsis unestablished (in infected cases)	9
Deaths during the week	1

After the weekly report was read, there also was added a summary of all cases since January 1 or July 1 in a given year, for six months or the period of service of each unit of the house staff. Without going more into detail I will submit the total records for each six months since Jan. 1, 1912, together with a few brief comments which will give a fair idea of the infection occurring in our service for the past two and a half years.

During this period our technic may be summarized as follows:

Whenever possible a tub bath was given to the patient the night before operation, followed by shaving the wound area, and the application of a soap poultice. After from four to eight hours, this was removed, the part scrubbed with soap and hot water for five minutes, and a wet mercuric chlorid dressing applied. On the operating-table this dressing was removed by a sterile assistant, the parts rescrubbed for one minute, douched with ether, alcohol, and a 1:5,000 solution of mercuric chlorid. The wound area was surrounded by sterile towels, and the entire body covered by sterile sheets. Sterile caps, gowns, and gloves were worn by all participating in the operation. The towels around the wound area were changed as often as soiled, and always before the insertion of the cutaneous sutures.

The method of sterilizing our material will not be described, as it did not differ in any material way from that employed in any modern surgical clinic. Suffice it to say that frequent bacteriologic examinations demonstrated that our material was sterile. We did not at that time use the long-sleeved gowns, completely covering our arms, and did not wear face masks in ordinary cases. The reason for the latter omission was, not that we disapproved of the plan, but by a system of hand signals, we were able to avoid talking during most routine operations.

Our technic was changed slightly in two classes of cases, operative treatment of fractures, and open operations on the knee joint. In these cases face masks or helmets were worn, and nothing entered the wound which had been touched even with the gloved hand, all manipulations being carried out by instruments.

It will thus be seen that our technic was by no means an elaborate one, our aim being to keep it as simple as possible, and to make changes only when we felt that by such changes our results could be improved.

In the following tables we shall give the results of our method in clean cases, in which infection could only be introduced during our operative procedures by some error in technic; also we will state the number of infected cases rendered sterile by our operative treatment.

I regret that we have not accurate records of the results in our borderline cases. While these often were read at our weekly conferences, they do not appear with any regularity in the records which have been preserved. This, while regrettable, does not in any way lessen the value of our report, for infections occurring in this group could never be attributed to technical errors, as the wound was always contaminated at some time during the operation. By borderline cases we refer to those in which an otherwise clean operative wound was at some time in contact with an infected area or material, but in which it was possible generally to avoid gross infection by extra care. In this group we would include such cases as a gastro-enterostomy, an appendectomy in which it was impossible to cauterize the stump before inverting it, and a cholecystostomy with infected bile.

SUMMARY OF RESULTS

Total cases from Jan. 1 to July 1, 1912	457
Clean	250
Infected	139
Borderline	69
Asepsis maintained in	244
Asepsis lost in	6
Percentage of infection in clean cases	2.4

In discussing this report, our entire staff expressed surprise and disappointment. We all had the idea that our infections would not amount to more than 1 per cent. of our clean cases. During the next six months, we adopted the plan of watching each other operate, Dr. Darrach, Dr. Russell and myself each acting as censor at different times, and critically observing every step of the operation. As the result of these observations we found that the suture and reserve instrument tables were too near the operating table and that the towels covering these were not infrequently contaminated by orderlies and unsterile nurses while bringing in the patient, handling hand-lights or the cautery apparatus. While these contaminations were not directly to the instruments or suture material, it was possible indirectly to destroy their sterility by first handling the contaminated towels and later the instruments, sponges, or other material. A number of other possible errors in technic were noted, and after consultation with Dr. Peck we rearranged the tables and fixtures in the operating-room, adopted new stoppers for our ligature flasks and water bottles, had the patient transferred to the operating table, prepared and draped in an adjoining room, and in a number of other ways altered our routine technic. These changes resulted in a decided improvement in our results, as will be seen in the following tabulation:

Total cases from July 1, 1912, to Jan. 1, 1913	445
Clean	234
Infected	131
Borderline	80
Asepsis maintained in	231
Asepsis lost in	3
Asepsis established in	60
Percentage of infection in clean cases	1.2

Total cases from Jan. 1 to July 1, 1913	474
Clean	213
Infected	148
Borderline	113
Asepsis maintained in	209
Asepsis lost in	4
Asepsis established in	102
Percentage of infection in clean cases	1.8

As the result of a staff conference at this time, we decided to adopt the long-sleeved muslin operating-gown, changed between each operation. While I have always been opposed to this procedure for the reason that accidental contamination on the skin of the bare arm was more easily felt than on even a light muslin covering, I yielded to the wish of the majority of the staff, and the results since that change seem to indicate its merit:

Total cases from July 1, 1913, to Jan. 1, 1914	439
Clean	243
Infected	125
Borderline	71
Asepsis maintained in	239
Asepsis lost in	4
Asepsis established in	70
Percentage of infection in clean cases	1.6

In our investigation of the infections occurring in clean wounds prior to July 1, 1913, no facts were elicited which would enable us to ascribe them to factors other than technical errors occurring during operation. Just what these errors were was not always determined, but there was no evidence to indicate that the infection was due to conditions beyond our control.

In investigating the four infections occurring during the period from July 1 to Jan. 1, 1914, it was found that three of the four cases occurred quite close together and all had been operated on under local anesthesia. Bacteriologic examination proved that the novocain solutions were contaminated, as a result of faulty preparation. During this period the solutions for local infiltration anesthesia were prepared in the drug department of the hospital, and they were delivered to the operating-room nurse ready for use. It will thus be seen that these three infections could not with reason be ascribed to errors in operating-room technic, as none of the staff or operating-room nurses had anything to do with the preparation of the infected solutions.

If therefore we exclude these three infections, the number of infections in clean cases during that particular six months would be reduced to 1, or 0.4 per cent.

Total cases from Jan. 1 to July 1, 1914	559
Clean	273
Infected	220
Borderline	66
Asepsis maintained in	273
Asepsis lost in	0
Asepsis established in	64

During the last two months of this period the service was in charge of Dr. Charles N. Dowd, who succeeded me as senior surgeon to the first division on May 1, but as the routine technic remained practically unchanged, the entire period of six months is included in this report.

Many years ago I established the custom of giving a prize to the house surgeon on whose service of six months, no clean case became infected. This prize has been won by three men, Dr. John H. Blue, now of Montgomery, Ala., the late Dr. W. W. Miller of Washington, and Dr. Armitage Whitman of this city, whose service terminated July 1, 1914.

During the progress of these studies in technic after accurate records were kept, we determined to widen the field of our observations somewhat and to include in our weekly reports the record of all catheterizations which occurred on our service. The reason for this will be patent to every hospital attending, for we are all familiar with the increased suffering and prolonged convalescence which so often follows a cystitis resulting from perhaps a single postoperative catheterization. A weekly record therefore was kept of each catheterization occurring on the service, with the name of the house officer or nurse who performed it, together with a report of the urinary analysis both before and after. While this plan was only recently adopted and the number of observations is too small to be of much value and is therefore not included in our lists, it is gratifying to report that in no instance since records have been kept has catheterization resulted in infection.

During a part of the time covered by these observations, a record of all cystoscopies were included in our weekly conferences. These were not introduced into this report for the reason that the records are imperfect during a part of the time, possibly because the results were invariably the same. It is, however, only fair to Dr. Edward F. Kilbane, our cystoscopist, to state that during a period of eight years, he has made over 1,050 cystoscopies in the Syms Operating Building on both private and ward patients, without infection of a sterile urinary tract occurring in a single instance, and without infection being transferred to a sterile ureter or kidney from an infected ureter or bladder.

Although not strictly germane to the subject, it may also be of interest to state that during the fourteen years which have elapsed since my appointment to the attending staff of the Roosevelt Hospital, not a single infection has occurred in a rather large series of arthrotomies of the knee joint, undertaken for the repair of a fractured patella, ruptured quadriceps or its tendon, or for the removal of joint mice, injured or dislocated semilunar cartilages. This statement includes all cases, in both surgical divisions, in which an incision has been made into the sterile knee joint by any member of the staff.

To recapitulate briefly the facts bearing on the main object of this communication, namely, to give the percentage of infections occurring in our clean cases during each of the five periods of six months since Jan. 1, 1912, it will be seen that for the first six months in 1912, the percentage of infection occurring in clean operative wounds was 2.4 per cent., for the second six months 1.2 per cent.; for the first six months of 1913, 1.8 per cent., for the last half of 1913 1.6 per cent., if we include the three cases in which infection occurred as a result of using an unsterile solution of novocain for local anesthesia, for which none of the operating-room staff was in any way responsible, or 0.4 per cent. if these are excluded. For the six months ending July 1, 1914, no infection occurred in the 273 clean cases.

If, as seems fair, we exclude the three cases referred to above, during the year from July 1, 1913, to July 1, 1914, only one infection for which the operating staff could be held responsible occurred in 516 cases, or a little less than 0.2 per cent.

MEDICAL INSTRUCTION IN THE SEVENTEENTH CENTURY*

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The dawn of the seventeenth century called into existence a new era in medicine—the reformation of anatomy. Western Europe, emerging from the intellectual darkness of the Middle Ages, awoke to the Renaissance; and medicine, with the other branches of knowledge, was invested with a new significance and a new potentiality. Free thought and free inquiry took the place of blind credulity. Truths that had been monopolized by an exclusive caste for centuries became the common property of all that were able to grasp them. This great humanistic struggle for a new birth of intellectual, esthetic and spiritual aspiration revolutionized every department of science, and nowhere did it work greater changes than in the field of anatomy.

ANATOMY

The anatomy of the schools was still that of Galen, and it remained for Andreas Vesalius to release the subject from the theologic idea of sanctity and to uphold the right of free inquiry into the anatomy of man. Vesalius, the man of genius and courage, dissatisfied with the absurd and visionary notions of the human body as described in the works of his day, cut loose from the doctrines of authority of individuals by interrogating Nature itself. No sooner did he appeal from the decision of Galen than others began to throw off the shackles of tradition and to observe and think for themselves. His master Sylvius, his pupil Columbus, his successor Fallopius, and also Eustachius, although they were in some respects opposed to his teaching, nevertheless widened the path which had been blazed by the great reformer. The publication of his famous work, "De Humani Corporis Fabrica" (1543), marked the beginning of a modern anatomy, and laid the foundation for the study of pathologic anatomy and physiology. The most skilful artists of the day—Leonardo da Vinci, Michael Angelo and Johann Stephan von Calcar, a pupil of Hitian, immortalized by his engraving of Vesalius—allied themselves with the anatomists and put their dissections upon paper and plates. Surgery received new methods from Ambroise Paré. Servetus described correctly the pulmonary circulation in a theological work which, with its author, was burned at the stake by John Calvin. About this time Fabricius ab Aquapendente pointed out the valves in the veins, and Andreas Cesalpinus explained more fully the mechanism of the lesser circulation. By the labors of all these great apostles the way was paved for the discovery of the true course of the blood by William Harvey, in 1628. All were full of the spirit of modern science, which, after all, was the spirit of the Renaissance; and in them one can find abundant material for the study of the psychology of that most interesting period in the evolution of modern thought.

Fig. 1.—Andreas Vesalius.

It was the operation of this humanistic spirit which influenced the great changes that took place in the teaching of anatomy, physiology and medicine in the schools of the seventeenth century.

Anatomy had already attained a place in the curriculum at many of the schools. The universities of Padua, Bologna and Salerno had been famous for its study through the Middle Ages, and during the sixteenth and seventeenth centuries the first two still enjoyed celebrity in these faculties. In 1626 Caspar Bartholin mentions, besides the cities above, Montpellier, Paris and Leyden, the great centers of medical education in the seventeenth century, as places most frequented and affording the best opportunities for witnessing public dissections. The study of human anatomy owed the active development which it received in Italy during the sixteenth century to the contemporary princes, including the popes, for without their patronage, the human bodies necessary for purposes of dissection would not have been accessible. A beginning in the study of comparative anatomy was likewise made from the necessary comparison of Galenic or animal anatomy with the new human anatomy.

In Italy dissections were held during the cold season, and in Padua all other lectures were suspended during January and February. Many preparations had to be made and many things provided for. The whole affair was arranged by the students, who likewise chose the teacher. An excellent description of the manner of conducting one of these public anatomies is given by Alexander Benedictus, who was in Padua at the time. He writes:

> This kind of dissection of the human body has long been permitted by pontifical decrees; otherwise it would have been looked upon as depraved or profane. The purging of the souls of those who are to be dissected is taken care of by rites, and for the indignity done unto them we make amends with prayers. For this reason many while in prison ask to be given to the physicians rather than to be put to death publicly at the hands of the executioner. This kind of body cannot be acquired without the Pope's consent. Lawfully, for dissecting purposes, there can be demanded lowly people and unknown persons from distant parts so that the neighborhood or relations cannot be offended. Those chosen are the ones who have been suffocated by hanging, and are middle

* Read before the St. Louis Medical Society, Feb. 27, 1915.

aged, not too thin, and not too fat, and of rather tall stature, so that there will be great mass seen by the spectators. The dissection necessarily must be done in the cold winter, so that the bodies will not putrefy too quickly.

In addition, an amphitheater must be arranged with seats according to rank, as in the Roman arena, and sufficiently large to accommodate the crowd without disturbing the surgeons, who must be skilful and have dissected often. A leader must be chosen, a *praefectus* who is in charge and assigns the seats according to rank. Guards are appointed to keep the mob back. [How necessary this was can be seen from the regulations of the anatomy lectures at Surgeons' Hall in London, as late as 1753: "to fix iron spikes in the theater to prevent the mob from getting over the outer rail."] Two trustworthy treasurers are elected who buy what is needed with the money collected. This includes razors, small knives, hooks, trephines, chisels, mallets and sponges to remove the blood during the dissection. Besides, there must be torches in readiness for the evening. The body is placed in the middle of the amphitheater on a raised table in a spot which is light and convenient for the dissector. The time for returning is announced to the assembly when it disperses, so that the work can be finished connectedly before putrefaction sets in. Invitations are issued to the university and the city officials; and when the dissection begins, an introductory address, sometimes preceded by music, is made by the anatomist concerned. The dissection now continues from day to day until all parts are exposed. When all is done, the corpse is brought to a church, followed by the clergy, the whole university and by all who had attended the anatomy, with lighted candles, and finally interred with great solemnity by a *humanarum litterarum* professor with a long speech.

Fig. 2.—Title page from Vesalius' second edition, 1555.

A striking feature of this account by Benedictus is the solemn ceremony which accompanied the dissection, a ceremony which was, in fact, even more elaborate than his description implies. As the bodies used were those of executed criminals, each cadaver, before being operated on, was "purified," or made reputable, in order that those who came in contact with it might not become disreputable. This "purification" was accomplished by the reading of a suitable decree by the lord of the land or the magistracy. After this, the professor of anatomy, by order of the senate or the medical faculty, stamped the seal of the university on the breast. The body was then carried by volunteers into the anatomic hall, and the cover on which it rested was returned to the executioner. This solemnity soon vanished and gave way to festive performances. Entertainments graced with music were given, and in England a "public anatomy" was always kept as a high festival by the Company of Barber Surgeons and was celebrated by a dinner.

The earlier ceremonial features were naturally abandoned as the opportunities for human dissection became more frequent and public anatomic theaters were established. These theaters were more common in non-German universities, to which the students flocked in great numbers. How rare dissections were in Germany during the seventeenth century may be learned from the fact that they were given in Frankfort-on-the-Main only eight times between the years 1615 and 1683. It is no wonder, then, that the University of Leyden, with her special equipment for the study of anatomy, held her supremacy during this period and maintained it down to the end of the eighteenth century. This university was founded by William of Orange, in 1575, as a reward for the heroic defence of the previous year, the tradition being that the citizens were offered the choice between a university and a certain exemption of taxes. The anatomic theater was built in 1610 under the direction of Pieter Pauw, who had been a student in Padua under Fabricius.

John Evelyn, who visited Leyden in 1641, makes the following record in his diary:

> I was much pleased with a sight or their Anatomy schole theater, and repository adjoining, which is well furnish'd with natural curiosities; skeletons from the whale and elephant to the fly and spider, which last is a very delicate piece of art, to see how the bones (if I may so call them) of so tender an insect could be separated from the mucilaginous parts of yt minute animal. Amongst a great variety of other things, I was shew'd the knife newly taken out of a drunken Dutchman's guts by an incision in his side, after it had slipped from his fingers into his stomach. The pictures of the chyrurgeon and his patient, both living, were there.

Gradually with the progress in the teaching of anatomy, institutions for instruction in medicine increased and those which already existed were developed. Amphitheaters for dissections were slowly opened in every city in Europe. In Dresden as early as 1617 there was an *Anatomiekammer*, as the dissecting room was called in Germany at that time and subsequently. In 1644 Copenhagen built its *domus anatomica*, inaugurated by Simon Paulli and used a few years later by Thomas Bartholin. In Edinburgh an anatomic theater was first erected in "Surgeons' Hall," in 1697.

In spite, however, of the improvement in the conditions of anatomic instruction, the equipment for that study was in many respects limited. For instance, it was considered a special attraction for the university and still more for a professor or physician to possess an entire skeleton. Vienna did not acquire one until 1658 and Strassburg not until 1671. Incidentally, it may be remarked that anatomic plates with movable layers existed as early as this period. The first one, the "Catoption Microcosmicum," cut by Stephan Michaelspacher, was published at Ulm in 1613.

SURGERY, PHYSIOLOGY AND RELATED SCIENCES

There seem to be periods in the progress of every department of science, when instead of making new

improvements, the energies of its cultivators are directed to the perfecting of previous inventions and discoveries. Such seems to have been mainly the case in the surgical history of the seventeenth century. We find no surgeons ranking with Ambroise Paré or Anthony Chaumette, of the sixteenth century, under whose leadership France maintained its supremacy in surgery for nearly two centuries, until the time of John Hunter. Instruction in surgery was well regulated only in France, for it possessed a surgical college and faculty proper regulated by royal warrants. Up to 1635 demonstrations of anatomy and surgery were given in the Jardin Royal at Paris by a physician and not a surgeon, and not until 1671 was it decreed by the king that the lectures should be read by a surgeon. As early as 1673 Pierre Dionis was giving courses in operative surgery on the cadaver, and his treatises on operations and anatomy were standard works for half a century. They were translated into other languages, even into Chinese.

In Italy, the surgeons never occupied a position absolutely separate from medicine and in this century the professorship of surgery in the universities was filled by the most distinguished professors, especially of anatomy. These two branches were everywhere regarded as almost dependent upon each other, even in the succeeding century. In Germany those physicians educated in Italy were the first to devote themselves to surgery, yet the most important German surgeons, *Wundärzte*, came from the barber shops alone and received their instructions from the guild-masters. The strife and jealousy about competency between physicians, surgeons and barbers were very frequent, and continued with unabated fervor during the whole of the seventeenth century. The Company of Barber Surgeons in England was a thorn in the side of the English surgeon until 1745. Surgery was thus debased until the eighteenth century, when special chairs were established at all the large universities.

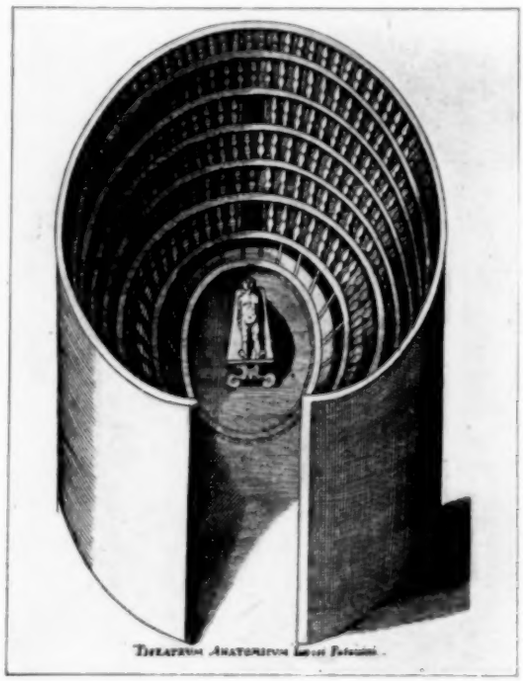

Fig. 3.—Anatomic theater, Padua, 1654.

Practical instruction in obstetrics as a branch distinct from surgery was not yet given to men. The chief cause of this is probably to be found in the fact, that, in earlier times, the practice of the art was generally confined to women. Male practitioners were during this period and for a long time thereafter called to treat parturient women only when the resources of the midwife as well as the energies of the patient were exhausted. In consequence of this a great deal of what was written dealt solely with instrumentation, and the energies and inventions of the male practitioners were directed not so much to the normal process of parturition as to its abnormal conditions. Up to the end of the seventeenth century the leading works on midwifery at the command of the student were comparatively few, and the majority of them were issued from the French press because it was in that country that clinical facilities for male observation had earliest existed. Perhaps the leading representative during this epoch was François Mauriceau, whose treatise, published in Paris in 1668, became the stimulus for such rivals as Portal and Deventer. Of the earliest works to command attention in England, and to keep a footing for a long time thereafter, indeed well into the eighteenth century, was the translation of Rösslin by Thomas Raynold (or Raynalde), which he entitled "The Byrthe of Mankynde." In a general way practical obstetrics owes its great advancement, which began at this period, directly to the favorite of a king, for after the Duchess de La Vallière, mistress of Louis XIV, had been attended by Julian Clément in 1663, the princesses of the period hastened to be confined by male accoucheurs. The loose morals of the court and in the higher circles of society had at least the good effect of permitting men to act as obstetricians. This practice was rapidly diffused from France into other lands and with the invention of the obstetric forceps and the general acceptance of version, obstetrics experienced an advancement similar to surgery from which it now began to emancipate itself.

During this century the study of physiology also made great progress. With the increasing interest in the functions of the living organs, many physiologic vivisectional experiments were made which necessitated new technical methods. Injections in themselves were nothing new; but they were now employed on a larger scale, and their technic was considerably developed by Ruysch, de Graaf and Swammerdam. Berengarius had already forced water into blood vessels, and much later Jacobus Sylvius mentions injections of a liquid colored with saffron or wine, which he regards as inferior to inflation with air, as the liquid runs out and colors everything. Neither of these two mention what instrument was used. In 1668, Reinhart de Graaf ("De Usu Siphonis in Anatomia") introduced an improved syringe and gave injection a lasting place in anatomic technic. Jan Swammerdam aimed to get a preparation which could be injected warm and solidify afterward. He has the credit of having introduced wax, although he first tried suet.

Preservative treatment of cadavers for transportation, interment, and the like, was well known. Ambroise Paré relates that for his own use he preserved a body and removed nearly all the muscles on the right side, so that one could see the heart, lungs and diaphragm. He had it for twenty-seven years and used it to refresh his memory when about to operate. Both dried and wet specimens were exhibited in the museums. Permanent preparations of ves-

sels and nerves were in the beginning exhibited by dissecting them entirely out and mounting the whole ramification flatly on a plate. Specimens of this kind are said to have been made in Padua in the time of Vesling, by J. A. Leonaenas. They were later presented to the Royal Society of London by John Evelyn, who records in his diary for the year 1646:

> Three days after this I tooke my leave of Venice, and went to Padoa, to be present at the famous Anatomic Lecture, which is here celebrated with extraordinary apparatus, lasting almost a whole month. During this time I saw a woman, a child and a man dissected with all the manual operations of the chirurgeon on the humane body. The one was performed by Cavalier Vestlingius and Dr. Jo. Athelsteinus Leonaenas of whom I purchased those rare tables of Veines and Nerves, and caus'd him to prepare a third of the Lungs, Liver and Nervi sexti par, with the Gastric Veines, which I sent into England, and afterwards presented to the Royall Society, being the first of that kind that had been seen there, and for aught I know in the world, tho' afterwards there were others.

Some very old anatomic preparations are still to be found. In the Musée Orfila, in Paris, there is a muscle phantom of wood by Albinus with all the muscles loose; and in the Victoria and Albert Museum, in London, are several small wax models of muscles by Michael Angelo.

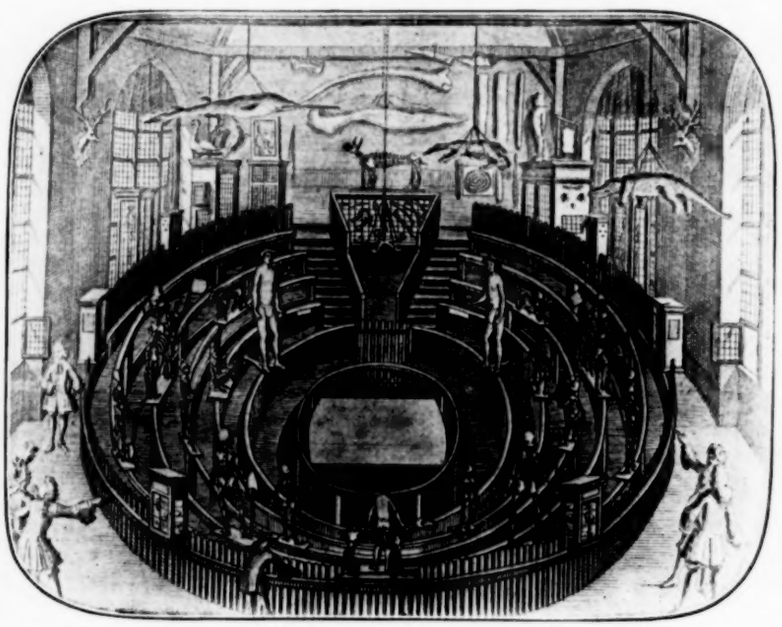

Fig. 4.—Anatomic theater, Leyden.

While anatomy and physiology made a philosophical progress, the advance of practical medicine was retarded by the false doctrines of the day. The two principal schools, the iatrochemical and iatromathematical, followed different paths. The former, whose theory had descended from Paracelsus through Van Helmont and was propagated chiefly by Sylvius in Holland and Willis in England, regarded all vital forces as chemical in nature. It had a great influence in Germany, though in France the Hippocratic and Galenic methods prevailed. Sylvius' leading principle was that a perpetual fermentation goes on in the body, from the deranged action of which diseases start.

The second school of medicine, which superseded, sought to explain all physiologic phenomena by static and hydraulic laws. This seems to have arisen in Italy, and was represented by Borelli, who applied mathematical principles to muscular movements, by Sanctorius and by Déscartes. This school had the same leading defect as the chemiatric: it forgot the peculiarity of the laws of organization and life which often render those of inert matter inapplicable.

Not until the latter half of the seventeenth century did internal medicine get its proper start when Sydenham, sometimes called the English Hippocrates, applied the methods of observation and experience and did not adhere blindly to any one theory. The discovery of several medicines, especially Peruvian bark, and its use in England in 1654, contributed to the success of the "empirical" physicians, as Sydenham and his followers were called, since the efficacy of some of their remedies could not be explained on the hypotheses hitherto prevalent. Sydenham's "Dissertatio Epistolaris" appeared in 1682 and contains his classic description of hysteria, which he recognized as a special form of disease. In 1686 he brought out his "Schedula Monitoria," the last medical work which he published during his lifetime. The most notable passage in the book is his differentiation of chorea minor from the rare epidemic hysterical disorder formerly called St. Vitus' dance, or the "dancing mania" of the Middle Ages. His posthumous "Processus Integri" (1692) was the therapeutic guide of the English physician for more than a century. Such were the opinions which prevailed in the schools of medicine of the seventeenth century and consequently among physicians.

Until nearly the end of the seventeenth century, the diagnosis of disease from the urine had always been based on its appearance alone, and not until 1655 was the first inquiry made into its composition. For centuries urine examination had made little or no progress, and its use in diagnosis had drifted largely into the hands of quack doctors and charlatans. Van Helmont introduced the gravimetric idea in the analysis of urine, and in 1674 Thomas Willis observed that urine in diabetes possesses a sweet taste although the cause of the sweetness was not determined until a century later. With the researches of Bellini and later of Boerhaave, the close of the seventeenth century saw the advent of the scientific examination of urine. The fact that uroscopy was so common a feature in everyday life is doubtless the reason for its being a favorite subject with many of the famous artists of the Dutch, Flemish and German schools of this century.

Though some permanent enrichment was made in the materia medica of the period, yet the medical student was taught to use many of the old-time remedies. Hence a number of the most absurd and polypharmacal compounds were retained in the pharmacopeia. The medical compounds formerly employed were chiefly empirical nostrums, or heterogeneous mixtures of substances, some of which neutralized others, and were selected without any reference to scientific principles. One of the most striking instances

of this practice is to be found in the Mithridate, which has a compound of seventy-two ingredients. Chemistry was so little advanced, that the real composition of ordinary remedies was seldom understood. Snails, vipers, the urine of men and animals, calculous concretions, various portions of criminals, as the thigh bone of a hanged man, and many other equally absurd remedies were extolled as specifics for a variety of disorders. The materia medica was divided into two classes, chymicals and Galenicals. The "chymical medicins" were of mineral origin, and prepared by fire: the Galenicals comprised the herbs, roots, and other vegetable or animal substances. As the newer chemical remedies were antigalenical, the faculty almost everywhere opposed them and demanded their abjuration in the doctor's oath. Gradually, however, as the years went by and as the science of chemistry unlocked the marvelous resources and products of nature, most of these old relics of the days of superstition and witchcraft were left behind and forgotten.

It was in this century that more and more attention was paid to instruction in the sciences allied to medicine. Botanical gardens became a part of the university equipment and were laid out and generally directed by the professor of anatomy, who also lectured on botany. John Vesling, the eminent anatomist at Padua in 1632, taught botany as well, and died in the orient while on a botanical excursion. In Leyden, Pieter Pauw, and in Copenhagen, Simon Paulli gave instruction in this branch. To the student of medicine of today it appears odd that a professor of anatomy should likewise hold the chair in botany, but we must keep in mind that a large proportion of the physicians of the seventeenth century, in their general zeal for science, had an intimate knowledge of botany, chemistry, mathematics and natural philosophy. Meibomius, for instance, was equally versatile in medicine, history, and poetry; one of the Bartholins in philosophy, philology, archeology, geometry and medicine. A permanent influence on medicine was secured during this period by chemistry, which developed from its origin in alchemy into an independent science. But chemical laboratories were mostly the private property of the individual teachers, as the *collegium chymicum* of Johann Kunkel of Wittenberg. Even at this time Kunkel estimated the value of chemistry to the physician:

Fig. 5.—Amphitheater at Leyden, built in 1610 under the direction of Pieter Pauw.

> Medicine enjoys no slight benefit from this art. A physician cannot possibly recognize diseases and their origin by means of anatomy if he is not experienced in chemistry. Still less can he know the peculiarities and effects of medicines or recognize the functions of the body.

MUSEUMS

The development of the anatomic museum was an important feature of this period. The collections at first consisted of only a few skeletons placed in the ampitheater, but by additions of anatomic preparations and specimens of birds, animals and fishes, the museum assumed a mixed character. In the catalog of the Leyden museum one finds: an Indian hog, a mandrake root, narwhal's teeth, a human skeleton, dried muscles, etc., besides the rare animals which were brought home from the colonies. Not infrequently private individuals established museums which were at the student's disposal. One of the most famous belonged to Frederick Ruysch, professor of anatomy and botany in Amsterdam. His collection contained, besides zoological objects, a great many anatomic preparations, both normal and pathologic, which he described and pictured in his "Thesaurus Anatomicus." He was especially well versed in the art of anatomic injections, and his specimens were made and arranged with the help of his daughter Rachel. For originality and delicacy of detail Ruysch deserves special mention. Great stress was laid on graceful arrangement: one could view a rock picture, for example, made of bladder, kidney and gallstones, upon which were placed embryonic skeletons posed in quaintest attitudes, one wiping its eyes with a piece of injected omentum, another pointing with a pathologic object to a malformation of its head; the whole disposed in a rich vegetation of injected and corroded ramification of blood vessels, and supplied with appropriate mottoes wherever it was possible to apply them. The museum occupied five large rooms and was open to medical students and the public alike. Ruysch himself showed the student or visitor about and was paid for his services just as if it were a consultation. In 1717 he sold his large collection of anatomic preparations to Peter the Great for 30,000 gulden, but only a part, it is said, reached Petrograd, as the sailors drank the spirits. Ten years later another collection was disposed of for a like sum to John Sobieski, king of Poland, who presented it to the University of Wittenberg, so famous in the story of Luther and the Reformation. In Copenhagen, in 1659, a museum was started above the domus anatomica, and took over the large and valuable collection of Henrik Fuiren.

UNIVERSITIES AND MEDICAL SCHOOLS

The constitutions of the universities from the outset were democratic, in that the students formed the controlling body of the community and made the professors dependent on them—a strong contrast to the conditions in the institutions of our own day. The rector, the officers of the university, and even the teachers were chosen by the student body. Each department, as for instance, philosophy, medicine and

theology, had its own laws, and each group was divided into "nations" after their nationalities. Some of these "nations" possessed their own means and property and had special seals, not unlike the modern "corps" and Greek letter fraternity. The largest and most powerful of these "nations," especially at Padua, was that of the Germans, who among special privileges, had the right to carry a sword. Luther wore a sword, and on one occasion, when he suffered a bad fall, wounded himself severely with it in the thigh. The students often wandered from one university to another, just as they do today, and even the professors roamed about. Thus Vesalius taught in Padua, Pisa, Bologna, Louvain and in Basle, although the only means of travel were on foot or horseback.

Lectures began early in the morning and the medical students, as well as the surgeons, had the opportunity of being present at the hospital at stated times, "si quid rari occurrit." Occasionally the students made sick calls in the city with an instructor. Full instruction was given in the theory and practice of medicine during the school year by means of lectures and demonstrations under the guidance of special teachers. Each day's teaching was divided among various professors. One explained the medicine of Avicenna, another the theory of medicine in Galen and Hippocrates, while a third gave a course in the practice of medicine according to the writings of Rhazes. One of the foregoing lectured also on the pulse, urine, bleeding and purgation. As already stated, the anatomic demonstrations were given in winter, and during the warmer months the same professor taught surgery.

Fig. 6.—Anatomic theater at Copenhagen, used in 1662 by Bartholin.

Fig. 7.—Anatomiekammer.

The first attempt at real clinical teaching was at Padua, in the hospital of St. Francis, by Odoni and Bottoni, in 1558. About the middle of the seventeenth century (1636) bedside instruction was given by Otto Van Heurne at the University of Leyden, "Collegium publicum, in qua ad morbos cante curandos studiosi in nosocomio instruuntur," and by Ewald Schrevelius. This was continued from 1658 to 1672 by Sylvius, who introduced the complete clinical method, thus acquiring historical importance to himself and erecting a monument to his nation. His reputation as a teacher became so widespread that students flocked to him in great number from all parts of Europe, even Italy. The practice was neglected by his successors until Boerhaave occupied the chair of medicine.

The public act of graduation of a medical student was generally celebrated with much ceremony, and for several days there were music and feasts. The great expenditures required to obtain the doctorate often dismayed many aspirants. Hence at various places the students petitioned the chief executives to reduce the expense occasioned by the dinners and other ceremonies. The result was that new statutes were passed and this burden practically eliminated. The historic features of the routine medical examination and graduation of this period have been immortalized by Molière in "Le malade imaginaire." This charming and instructive comedy was produced in 1665, for the special enjoyment of the king and court. From the raising of the curtain till it falls the piece is the most scathing satire on medical art and science. No detail concerning the professors, practice, teachings and instructions is omitted that could supply a point for raillery and ridicule.

Incredible as it may appear, the majority of students attained the degree of bachelor, and conversed learnedly of the nature and cure of disease before having seen a case. This great object was to know and discourse on all that the ancients had said about health and disease. After two years of devotion to this course of study the student was eligible for the Baccalauréat, which was followed at intervals with further tests, and then came the examination for "licence," admission to the "vespérie," followed with "capping."

The scene takes place in the amphitheater of the old medical school of Paris or Montpellier. We see a crowd of old French medical celebrities of the seventeenth century including doctors, surgeons and apothecaries in full professional glory with their four-cornered caps, and red robes trimmed with ermine. Beneath them sit a number of students, wearing the

black robe of a bachelor. The dean presides and opens the ceremonies with a long discourse on the glories of the institution. The object of the assembly is then disclosed, this being the examination of a candidate, to determine if he can give sufficient proof of the necessary qualifications for becoming a licentiate for graduation. The candidate having furnished brilliant proof of his capacity, falls on his knee and receives the apostolic benediction. After an interval of six weeks or more the candidate is admitted to the "vespérie," which consisted of a pompous eulogy on the dignity and importance of the medical profession. On the final day he proceeds to take the oath, swearing faithfully to observe the statutes, to reverence the opinions of his seniors and never to make use of remedies except those sanctioned by them. The candidate solemnly repeats the immortal single word "juro"; the dean then thrusts the square bonnet on his head, accompanying the act with a slight tap; and the worthy licentiate is henceforth privileged to practice. The bachelor, having undergone the learned ordeal with success, delivers a flowery address and thanks his masters for the honor conferred. This lengthy ceremony with its innumerable dinners and banquets of old-time dimensions, which forms the substance of Moliére's sparkling satire, gives a true picture of the seventeenth century graduation ceremonies. Locke, in an account of a ceremony of conferring a degree which he witnessed while on a visit to France, describes the same sort of formality as that satirized by Moliére.

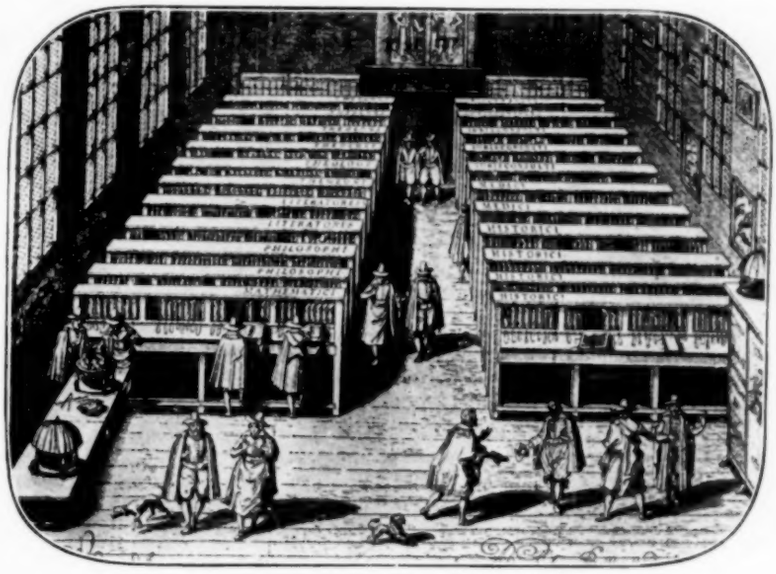

Fig. 8.—Chained library at Leyden.

Most of the universities had libraries, but the books were all chained to desks just as they may still be seen in the Laurentian library in Florence. The chains were formed of rod-iron bent into a figure-of-eight, with one end twisted around the middle for strength. Each chain was about three feet long and had at one end a ring, like a curtain ring, which, running along an iron rod, allowed considerable play. Thus one could take any book from its place to a desk at a little distance and there consult it, but could not take it away. There must have been some advantage in this plan or it would not have been generally adopted. Later the books were place on shelves as they are today.

Athletics were also encouraged, and at Leyden there was a complete gymnasium for the students.

In earlier times the practice of the teachers had been to dictate to their students; now, however, in order to save themselves the trouble of dictating and the students the trouble of writing, which was a very laborious matter in those days, it became customary for the lecturer to publish a book. Lectures and examinations were always held in Latin, and nearly all books written by physicians were in the same language, which continued to be the current tongue of scholars and student bodies everywhere for another half century.

When French was more cultivated and had a criticism of its own, this became the natural instrument of polite writers in France, and Latin fell to the merely learned, who neglected its beauty. In England it was customary to employ the native language for surgical works and the popular treatises on health.

THE MICROSCOPE

No history of medicine during this period would be complete without an account of the invention of the microscope. The latter was to medicine what the telescope was to astronomy. Compound microscopes constructed at this time were large and unwieldy and were invented by Hans and Zacharius Jansen, in 1620, and perfected later with better objectives by Robert Hooke. The instrument he used was about three inches in diameter, seven long and provided with four draw tubes. It had three glasses: an object glass, a middle glass, and a deep eye piece. The first simple microscopes had the lens and the objective united closely together in an inch long cylindrical tube allowing of no adjustment. The magnification was slight (10:1), and the instruments were mostly used as curiosities for looking at the wings of flies, fleas and the like. For higher magnifying powers, small lenses with short focal lengths were made.

These lenses were manufactured from glass, occasionally of rock crystal, by grinding or, to escape grinding, were formed by fusion. It was with such simple lenses that the first microscopic researches of scientific value were undertaken. Experimental physiology was now studied at all the universities, and by such early pioneers in the use of the microscope as Leeuwenhoek and Malpighi, Harvey's discovery of the circulation of the blood was completed. It was reserved for Malpighi in 1664, seven years after Harvey's death, to demonstrate on the lungs of a frog, by the aid of this instrument, the capillary anastomosis between the arteries and veins, the only missing point in Harvey's discovery. In connection with the early investigators of the microscope stand the numerous physiologic discoveries by Wharton, Glisson, Nuck, Bartholin and many others. Indeed, the seventeenth century is the era of the foundation of modern physiology.

ACHIEVEMENTS IN THE SEVENTEENTH CENTURY

The importance of the results of this century is, on the whole, incalculable. The great physiologic discovery of the circulation of the blood, the proof of the development of the higher animals from the egg, the reformation of the theories of vision, respiration and digestion, the numerous anatomic discoveries resulting from the closer union of anatomy and physiology, called into existence a new medicine. These are but a few of the innumerable glories of the profession of medicine in this century. The early teachers were laboring for the same objective that the modern scientific investigator is seeking today — the eradication of disease. Though we have advanced far beyond them in experience and knowledge, and successfully treat many diseases which they could not hope to do, for the science of medicine is an ever shifting and advancing one, yet their triumphs are well worthy of commemoration. When we contemplate the heritage which has descended to us, who would not be proud to be associated with the teachers of the seventeenth centry, to be a colleague of Harvey and Sydenham and Leeuwenhoek and Malpighi and de Graaf? Of the old-time makers of medicine, it must not be forgotten that by them was laid the firm foundations of our medical science of the present day.

30 North Michigan Avenue.

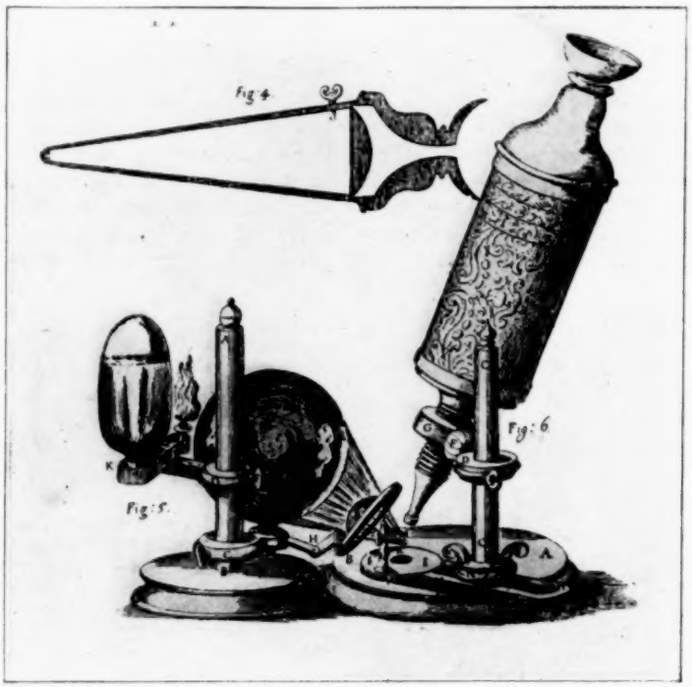

Fig. 9.—Hooke's compound microscope.

THE CONTOUR OF THE NORMAL ARTERIAL PULSE

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THE DETAILS OF THE PRESSURE CURVE IN THE LARGE ARTERIES

When the pressure within the large central arteries is recorded by mirror manometers capable of following exactly the detailed changes of pressure, the tracings (Fig. 1 *A*) manifest the following variations:

A wave, *a-b*, associated with auricular systole and due either to a direct impact or pull of the auricle on the aorta or to a presystolic rise of tension in the ventricle.

A preliminary oscillation, *b-c*, synchronous with the rise of intraventricular tension in early systole and probably due either to a bulging of the semilunar valves into the aorta or to a traction of the contracting ventricle on the aorta.

The primary oscillation, *c-d*, synchronous with the first ejection of blood and due to the oscillation of the arterial blood column.

The true systolic rise and summit, *d-e*, corresponding to the maximal pressure in the ventricle.

The systolic decline of pressure, *e-f*, due to the fact that the amount of blood flowing from the arteries into the capillaries per unit time is less than that ejected in the same unit of time from the heart.

The incisura, *f-g*, or sharp fall of pressure occurring at the very onset of diastole and due to the sharp fall of pressure in the relaxing ventricle.

The vibrations of the blood column, *g-h*, due to valve closure and responsible for the heart sounds.

The gradual fall of pressure in diastole, *h-i*.

INFLUENCES AFFECTING THE PRESSURE CURVE IN THE CENTRAL ARTERIES

Although the details of the pressure curve are retained under widely varying conditions of the circulation, the contour of the curve is determined by the systolic discharge and the peripheral resistance. A change in the peripheral resistance changes chiefly the systolic portion of the pressure curve, as shown by comparing *B* and *C* of Figure 1. The rate of the systolic fall, *e* to *f*, is determined by the balance between the volume ejected and the peripheral flow in the same unit of time. Thus, if the resistance is high and the outflow small as compared to the cardiac output, the pressure remains elevated and forms a plateau, as in *C*. On the contrary, if the peripheral vessels are dilated, as in Figure 1, *B*, the fall of pressure begins soon after the summit is reached and proceeds by a steeper decline to a lower level at the end of systole. When the output of the heart is diminished, the curve loses many of its characteristic features, as shown in Figure 1, *D*. The pressure slowly rises and there is no primary oscillation (*c-d*) probably because the ejection occurs with so little force that the blood column is not thrown into oscillation. The incisura is also less sharp but the amplitude of valve vibration increases (*g-h*).

RELATION OF THE CENTRAL PULSE TO INTRA-ARTERIAL PRESSURE

When blood is suddenly ejected during systole, it is largely accommodated by distending the aorta, which places the blood under pressure. As this increase of pressure is transmitted to the periphery, the arterial distention is also communicated from one segment of the vessel to the next. Hence the general teaching, that the pulse is a wave of pressure sweeping over

the arterial system at a velocity which is as independent of the velocity of flow as the waves in the river are unrelated to the current. It should be borne in mind, however, that when the pulse in any artery is felt we are not directly concerned with the pulse wave. *The pulse, as studied in any part of the arterial system, may be regarded as the expansion and relaxation of the arterial wall, produced by the intra-arterial pressure changes at that point.* If, therefore, a receiving tambour, such as is used in all polygraph work, be placed firmly over a large artery, such as the subclavian or lower carotid artery, and through it the variations in volume are transmitted to a segment capsule, we should expect to find all the details of the intra-arterial pressure curve in the record. This is precisely the case. In tracings taken from seventy-eight medical students during the last three years, I have never failed to discern the same details found in the pressure curve. This is illustrated in a few specimen records shown in Figure 2, in which the details are lettered as in Figure 1.

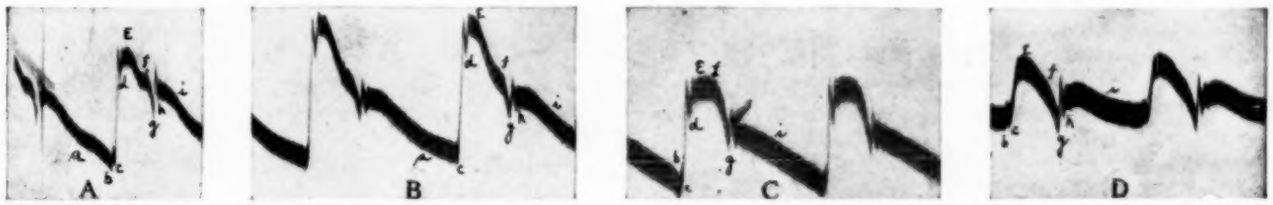

Fig. 1.—Details of the pressure curve in the central arteries under different conditions. Description in text.

The average curve obtained in this series of experiments rises to a peak in the systolic portion and then rapidly falls during the latter part of systole, indicating that the peripheral flow is normally large as compared with the ejection. The end of systole is always sharply indicated by the incisura and a series of valve vibrations. A computation of the period of rising tension (*b-c*) was possible in fifty-eight records, in which it was found to vary from 0.058 to 0.085 seconds. The entire period of systole (*b-f*) was estimated in sixty-three cases in which the heart rate ranged from 68 to 80 per minute and was found to vary from 0.26 to 0.33 seconds.

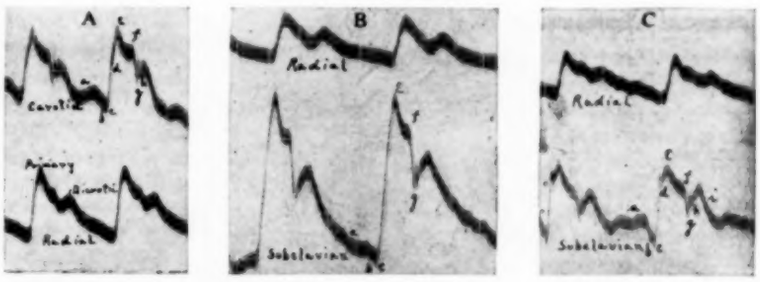

Fig. 2.—Three segments showing details of the central pulse in man and their transformation or obliteration when propagated to the radial artery. Description in text.

THE REQUIREMENTS OF APPARATUS TO RECORD THE CENTRAL PULSE FROM THE SUBCLAVIAN OR COMMON CAROTID ARTERY

The details of the central pulse recorded by Frank's segment capsules are not obtained when the tambour systems of polygraphs are used. This is due to the fact that their vibration frequency is too low. It is a simple fact in physics that an apparatus cannot vibrate at a greater frequency than its own inherent rate. A seconds pendulum cannot make four strokes per second. A tuning fork with a period of 100 per second cannot respond to 1,000 vibrations per second. Since the valve vibrations which are the shortest oscillations recorded have a period of from 0.02 to 0.023 second, it requires an apparatus with an inherent frequency of about 48 per second to record the details of the human carotid pulse. If it is desired that the different oscillations shall be reproduced in their correct amplitude as well, it is necessary to have an apparatus with a frequency far above this figure in order to avoid resonance effects. In pathologic pulses in which murmur vibrations are present the requirements are even greater.

By actual test, the following vibration frequencies were obtained from a few forms of polygraphs in common use: Mackenzie polygraph tambour, 4.5 per second; Zimmermann polygraph tambour, 5.8 per second; Jacquet polygraph tambour, 6.5 per second.

It is clear that the details of the central pulse cannot be recorded by transmission systems of this character. The time relation and relative heights of the separate waves recorded are also not correctly reproduced. This is illustrated by the record of Figure 4 *A*, which was taken with the Zimmermann polygraph from the same subject as the record of Figure 2 *B*.

THE CONVERSION OF THE CENTRAL TO THE PERIPHERAL PULSE

A record taken by a transmission sphygmograph and a segment capsule from a peripheral artery such as the radial does not show all the details of the central pulse. The curves consist essentially of two slow waves, the primary and the dicrotic. All evidence of the preliminary oscillations has disappeared; the rise of the primary wave is much more gradual; the top, evenly rounded. Time measurements indicate that the upstroke of the radial is delayed owing to the time taken for transmission. The period between the rise of the primary wave and the rise of the dicrotic does not correspond to the period of systole estimated from the central pulse (Fig. 2).

These changes occur as a result of friction and interference with reflected waves from the periphery. Friction tends to smooth out all the finer oscillations, and converts the incisura and after-vibrations into a slow wave recognized as the dicrotic. The dicrotic wave, however, contrary to other oscillations spreading to the periphery, does not become smaller but increases in amplitude. This fact has led Frank to the inference that the dicrotic variation initiated by the incisura and valve vibrations in the aorta is augmented and modified by waves reflected from the periphery.

THE REQUIREMENTS OF SPHYGMOGRAPHS TO RECORD ACCURATELY THE PERIPHERAL PULSE

As a result of theoretical and experimental investigations, Frank and Petter found that a sphygmograph must have an inherent frequency of 32 per second in order to record the peripheral pulse correctly. Their study furthermore revealed the interesting and unsuspected fact that every sphygmograph that has been introduced since Marey's original model has become less accurate than its predecessor. Convenience has been acquired at the expense of accuracy. This is evident from a comparison of the following vibration frequencies established by Petter:

Marey sphygmograph	13	per second
Von Frey sphygmograph	11	per second
Dudgeon sphygmograph	9.2	per second
Jacquet sphygmograph (old model)	7	per second
Frank-Petter sphygmograph	32	per second

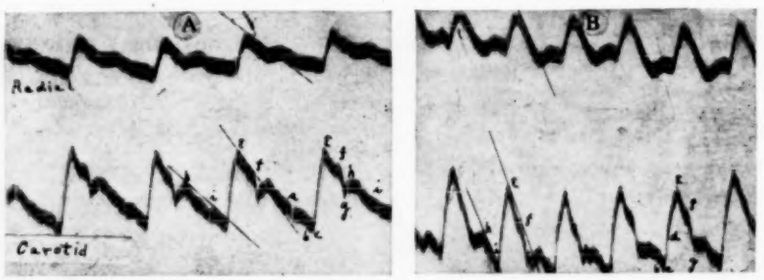

Fig. 3.—Two segments of radial and carotid pulse: *A*, under normal conditions, and *B*, after inhalation of amyl nitrite (low peripheral resistance).

The vibration frequency of the entire apparatus used in taking the optical tracings from the radial was 48 per second. There is another method of testing the efficiency of a radial sphygomograph which is more applicable to the clinic. It consists in recording the pulse tracings with varying pressure of the sphygmograph button. If the apparatus is reliable, the amplitude but not the contour changes. If it is inadequate, both contour and amplitude will change. The latter is the case of the new pattern of Jacquet, as shown in the curves of Figure 4 *B*, *C*, *D*.

THE INFLUENCE OF LOW RESISTANCE ON THE ARTERIAL PULSE

A low peripheral resistance is probably an accompaniment of many clinical conditions. The changes it produces in the contours of the central and peripheral pulses in man can be studied by inhaling the vasodilating drug, amyl nitrite. The normal radial and carotid curves are shown in Figure 3 *A*. The tracings at the height of a reaction are shown in Figure 3 *B*. These curves show, in addition to the increase in rate and the consequent shortening of diastole, other striking points of difference. The primary oscillation, which under normal conditions is not present in the upper carotid region, reappears distinctly at this distance under amyl nitrite (*d*). In the central pulse both the rate of decline in systole (*e-f*) and in diastole (*h-i*) is increased. In the peripheral pulse the decline during systole is also present, but during diastole is not recognizable. This is entirely due to the fact that the shortened diastole is filled by the dicrotic wave. Superdicrotism, such as occurs in the radial owing to the fact that the dicrotic wave is not completed before the next primary wave begins, is never present in the central pulse.

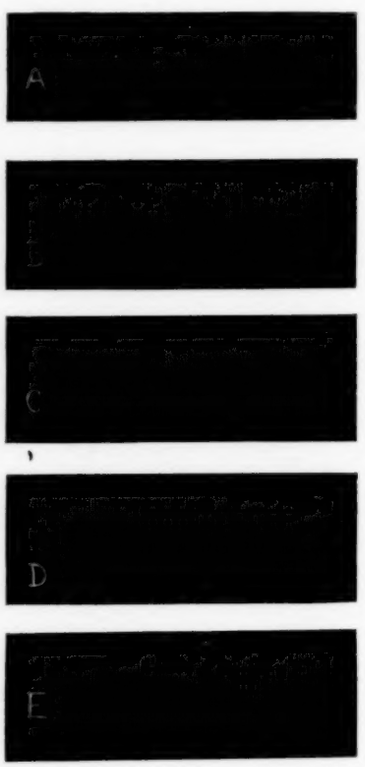

Fig. 4.—*A*, record of subclavian pulse by Zimmermann polygraph from same subject that tracing of Figure 2 *B* was obtained from. *B*, *C*, *D*, *E*, segments of records taken from radial artery of same subject with new form of Jacquet sphygmograph at different pressures of button. Movement of paper was not constant; heart rate was unaltered.

SUMMARY

The pulse, as palpated or recorded from any artery, is the variation in the arterial volume producted by the intra-arterial pressure changes at that point. The details of the arterial pulse correspond exactly to the details of the pressure curve. To record these variations requires an apparatus of higher efficiency than is supplied by any form of apparatus in current clinical use; hence, the details of these changes were not recognized until the introduction of the segment capsule of Frank.

The contour of the central pulse differs materially from that of the peripheral pulse. The former allows an exact study of the pressure changes in the large central arteries; the latter records these changes as modified by friction and waves reflected from the periphery. The central pulse offers exceptional opportunities for studying the condition of the circulation. A study of its contour during systole permits conclusions as to the relations between cardiac output and peripheral flow offered by no other method. The precise onset of systole and diastole can be accurately determined.

Statistics Concerning Negroes in the United States.—The U. S. Census Bureau will issue about March 20 a bulletin which will be the first to cover the mortality of negroes in the United States. Heretofore the negroes have been included with the Indians and other colored races. The data covers the registration area and fifty-seven selected registration cities having in 1910 a colored population of 2,500 or more. The negro population of the area was 19.7 per cent. of the total number of negroes in the United States in 1910, and the deaths numbered 49,499, a death rate of 25.5 per 1,000. The rate in 1900 was 29.4. In the fifty-seven cities the death rate among negroes in 1910 was 27.8 as against 15.9 per 1,000 among the whites. In the thirty-three northern cities the death rate was 25.1 and among whites 15.7. In twenty-seven southern cities the rate for negroes was 29.6 and that for whites 16.9. The tendency is for the death rate among negroes in the registration cities to decrease at a more rapid rate than that of the whites.

SYPHILIS IN CHINA

REPORT OF SOME UNUSUAL SYPHILITIC LESIONS

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Next to tuberculosis, syphilis is perhaps the most prevalent disease in China. Yet while the primary and secondary stages are frequently seen, tertiary lesions are less common, and so-called parasyphilitic affections are excessively rare. Syphilitic myelitis and endarteritis are fairly common, but in the medical service of the Yale Hospital there has been but one case of tabes dorsalis and none of general paralysis in the past year. This distribution does not hold in the large coast ports where there is a large Chinese population which has traveled outside of China and returned with a foreign luetic infection. In this class, the incidence of parasyphilitic conditions is similar to that in the west. No satisfactory explanation has been found for this state of affairs. It has been suggested that the *Treponema pallidum* of China is of a different strain from the occidental treponeme, and that it is not so prone to produce parasyphilitic lesions.

Fig. 1.—Syphilitic onychia (Case 1).

Fig. 2.—Syphilitic lesions on soles (Case 1).

As is to be expected, the average Chinese patient will not ordinarily continue treatment after the symptoms of syphilis have disappeared. Consequently a complete cure is difficult to obtain, and the infrequency of late luetic lesions is the harder to explain. The cases reported here are presented with the object only of recording certain interesting features. Complete reports are therefore not included.

Fig. 3.—Tubercular syphilid of face (Case 2).

CASE 1.—The patient, a Chinese man aged 46, was admitted to the medical service of the Yale Hospital complaining of severe pain in the knees and wrists of five months' duration. He gave a doubtful venereal history. Physical examination showed a general glandular enlargement including both epitrochlears and postcervical glands. There was a scar of a comparatively recent lesion on the penis. The significant lesions were on the shins, palms, soles and the fingers and toes. On the shins were typical rupial syphilids with a few periosteal nodules. On both palms and soles were typical papulopustular lesions with considerable overlying keratosis. This was particularly marked on the soles. The nails of both fingers and toes were the seat of an advanced onychia with a varying destruction of the nail and matrix. This was much more pronounced on the fingers than on the toes. No fungus was found on repeated examinations. There were scars and disappearing papulopustular lesions on all four extremities. At no point were the skin lesions itching or painful.

Treatment consisted of a mercury and iodid mixture internally, with an iodid dose amounting to 1 gm. three times a day. The patient had refused salvarsan. On the palms and soles a salicylic ointment with iodin was used until a clean new skin appeared. The diseased nails were painted daily with a 20 per cent. tincture of iodin until marked improvement and some soreness were obtained. The patient was discharged with a symptomatic cure. The nail-beds were clean and healthy, and new nails were starting on some of the fingers where the matrix was not completely destroyed. Advice was given as to continued treatment, but a symptomatic cure answers all the requirements of the average Chinese, and this patient will probably present interesting recurrences in the future.

CASE 2.—A Chinese man, aged 40, was seen in the medical outclinic of the Yale Hospital. He gave a definite history of luetic infection and secondaries. The interesting lesion consisted of a tubercular eruption on the face, the papules varying in size from a pinhead to a half inch in diameter. The case could not be followed.

CASE 3.—This patient was admitted twice at an interval of two years for a complete destruction of the nose due to syphilis. After a long course of treatment, the first time a plastic operation was done, but the graft could not obtain sufficient blood-supply and was not successful. A second operation was not undertaken, as a successful result could not be guaranteed. Complete loss of the nose is not uncommon from syphilis in China, but oftener there is seen a gross scarring of the face with complete destruction of the features and eyes, and only a small hole penetrating to the nostrils or the mouth. A somewhat similar condition is seen as a result of inoculation of small-pox in the nose.

Yale Hospital.

The Consumptive and the Quack.—The consumptive is the ideal victim of the quack, charlatan, and vendor of patent medicines, and this is particularly true of the consumptive who lives in rural communities, where often the local papers derive their greatest income from advertising nostrums and sure cures for consumption and other diseases. There should be a health publicity column in the local paper to enlighten the public. If necessary, the provincial or local department of health should pay for this, to compensate the poor editor for his loss of quack advertisements. The laity should be told that there is no sure cure for consumption; that good air, rest and good food under careful medical supervision, and the scientific administration of medicine to relieve distressing symptoms are, up to this date, our only means of curing tuberculosis, and that every advertisement of a sure consumption cure cloaks a swindle.—S. Adolphus Knopf, *Public Health Reports*, Dec. 18, 1914.

THE PRESENCE OF ARSENIC IN THE SPINAL FLUID*

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CHICAGO

Engman, Buhman, Gorham and Davis[1] state that in four cases of general paresis, the administration of large doses of neosalvarsan (0.9 gm.) intravenously, showed negative results as to the presence of arsenic in the spinal fluid in all four cases.

Citron states that salvarsan does not reach the spinal fluid by either the blood or lymph streams and cannot be demonstrated in the spinal fluid after subcutaneous or intravenous injection.

Wechselmann[2] doubts these results as to the presence of arsenic in the spinal fluid following such injections, as he has not been able personally to verify them.

Sicard and Bloch[3] administered salvarsan in 0.4 gm. doses to seven patients either subcutaneously or intramuscularly and no arsenic was found in the spinal fluid. They noted traces of arsenic in the spinal fluid, however, in one case two hours after an intravenous injection of 0.4 gm. of salvarsan.

Lorenz[4] gave sodium cacodylate intravenously in small doses and noted negative results as to the presence of arsenic in the spinal fluid. When the cacodylate was given large doses up to 1 gm. intravenously, small traces of arsenic were found in the spinal fluid one hour after the intravenous injection. However, on giving the cacodylate in 0.8 gm. doses and withdrawing the spinal fluid within a period of from six to twelve hours, negative results were obtained. This shows the impracticability of administering the cacodylate because of the size of the dose necessary to show a reaction of arsenic in the spinal fluid.

Camp,[5] in reporting a summary of seventeen cases in which 0.6 gm. doses of salvarsan were administered intravenously and the fluid withdrawn within a period of from fifteen minutes to forty hours after the injection, found arsenic in only one instance, namely, in a case of secondary syphilis fifteen hours after the injection. His conclusions are that salvarsan given in doses up to 0.6 gm. does not ordinarily result in the presence of arsenic in the spinal fluid.

Ravaut[6] believes that the condition of the meninges when the injection is made has something to do with the secretion of arsenic in the spinal fluid. He found traces of arsenic in six cases out of thirty-three observations; in one case eleven months, and in another three months after the injection.

Benedict[7] examined four specimens of spinal fluid withdrawn twenty-four hours after an intravenous injection of 0.4 gm. of salvarsan and in all four cases he found free arsenic in about one-sixth to one-tenth concentration in the whole blood. He concludes that in such instances the spinal fluid contains as much free arsenic as does the dose of salvarsanized serum.

The foregoing observations include about all of the literature which bears on this subject. In my personal experiments I have used sodium cacodylate, sodium arsenate, neosalvarsan and salvarsan, with the following conclusions:

SODIUM CACODYLATE

I administered sodium cacodylate intramuscularly in two cases, giving 3 grains in each case and examining the spinal fluid twenty-four hours later, with negative results. In two cases the cacodylate was given intramuscularly in 3-grain doses three times a day for three days, at the end of which time the spinal fluid showed no free arsenic. In two cases the cacodylate was given in 2-grain doses twice a day for three days and was increased to 3 grains twice a day for three days, with negative results. In the same cases the treatment was still further continued in 2-grain doses twice a day for six days without showing free arsenic in the spinal fluid. These cases included both tabes and cerebrospinal lues.

SODIUM ARSENATE

Sodium arsenate was administered in doses of 7 minims each of a 5 per cent. solution given intramuscularly, and the spinal fluid was examined in twelve hours, with negative results. In a case of tabes the same solution was administered in 5-minim doses subcutaneously twice a day for three days, then in 4-minim doses twice a day for four days longer, when the spinal fluid showed negative results for free arsenic. In a case of cerebrospinal lues a similar solution of sodium arsenate was administered hypodermically twice a day for seven days, when an examination of the spinal fluid showed the absence of arsenic.

NEOSALVARSAN

I administered neosalvarsan intravenously in 0.6 gm. doses to three patients with tabes and two with lues; the spinal fluid was withdrawn in one case in one and a half hours after the intravenous injection; in a second case six hours after the injection, and in three cases twenty-four hours after the injection, and no free arsenic was found in the spinal fluid in any instance. In seven cases neosalvarsan was administered intraspinally in approximate doses of 3 mg. each, according to the method of Ravaut, and the fluid was withdrawn ten hours after such injection; in four of these cases arsenic was present in the spinal fluid, while in three cases it was absent. In ten cases after the administration of neosalvarsan in like manner, the fluid was withdrawn within twenty-four hours after the injection and arsenic was present in one case and absent in nine cases. I have given neosalvarsan intraspinally in 125 cases and in only one instance, in a tabetic who was pronounced alcoholic, has there been any untoward effect.

SALVARSAN

I administered salvarsan intravenously in 0.4 gm. doses in three cases of tabes and three cases of cerebrospinal syphilis, withdrew the fluid in twenty-four hours after the injection, and the spinal fluid showed the presence of arsenic in two of the cases, namely, in one of tabes and in one of cerebrospinal lues.

In submitting these reports I have not recorded twenty-three cases carried out in a similar manner on a previous occasion, as I discovered that my technic was not properly perfected. I mention this fact because it demonstrates the great care necessary to avoid contamination from other sources. I have found

* Read before the Chicago Neurological Society, March 18, 1915.

1. Engman, M. T.; Buhman, Rudolph; Gorham, F. D., and Davis, R. H.: A Study of the Spinal Fluid in One Hundred Cases of Syphilis, THE JOURNAL A. M. A., Sept. 6, 1913, p. 735.
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that by simply using the ordinary precautions of sterilizing the needle by boiling, arsenic may be retained in the needle in sufficient quantity to give a positive reaction. Later, I observed greater care in washing the needle out with ether followed by sterile water and then boiling the needle, and my results as to the presence of arsenic immediately changed. I have also excluded in my reports specimens of spinal fluid which contained blood in those cases in which I had previously administered the different preparations intravenously or hypodermically.

I am submitting these preliminary reports and trust the future may reveal something in the way of importance along these lines. There should be some way of testing the relative toxicity of the spinal fluid on the spirochetes after the injections of these different preparations of arsenic. I would suggest also that by either increasing or decreasing the blood pressure or decreasing the pressure of the spinal fluid, arsenic may possibly be more readily eliminated into the spinal canal.

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AN EXAMPLE OF COOPERATION WITH THE CHINESE IN MEDICAL EDUCATION *

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The leaders in medical science in China to-day are agreed that in medical education lies the strategic basis for future development. In order to accomplish the most for China and to confer a permanent blessing on her people, they realize the necessity of conserving the comparatively insufficient resources of men and money, and of utilizing to the best advantage all available energy and effort in the training of Chinese doctors. With the limited supply of men and money from foreign sources, it is suicidal to spread out over the whole field waiting to be occupied. As Dr. Gillison said, "Plant all the hospitals and all the doctors in civil and military practice in Great Britain and Ireland in the one province of Szechuen, and provide for the rest of China in the same proportion, and you have some idea of the goal to be reached." And this leaves out of account the entire field of medical education, which is to supply the doctors needed.

The present opportunity is superb for medical men to do educational work, and thereby shape the medical situation for China. Delay now means permanent loss, for when China has organized her own medical institutions, the opportunity will be forever gone. The need of uniting all available forces in establishing union medical schools in strategic centers, in order that the limited foreign funds and men may be fully conserved, has already been sufficiently urged, and several such schools are now in operation. The purpose of this paper is to invite serious attention to a working example of cooperation with the Chinese in medical education on a new basis.

The advantages of such cooperation are:

1. The good will of the Chinese is enlisted. When they are made partners, opposing forces are changed into promoting ones.

2. Suspicion is removed. Cooperation brings closer touch with the Chinese and a truer understanding of the real purpose of missionaries in China, thus averting the besetting dread of the Chinese of foreign aggression in educational work. The result is increased confidence in foreigners and their activities and motives.

3. The advice and practical aid of the Chinese workers is indispensable in adapting such institutions to Chinese requirements. Only a Chinese can fully understand the Chinese point of view.

4. Cooperation with the Chinese gives the work more permanency. In medical as in other lines, foreigners are merely laying foundations on which the Chinese themselves must build. By cooperation alone is the work made continuous and lasting.

5. Through cooperation the Chinese learn the best methods of conducting schools, and foreign educators are enabled to direct the proper expenditure of funds.

6. With government recognition, the work is viewed with favor by the Chinese.

There are, to be sure, certain disadvantages, but the merits of cooperation vastly overbalance these, and in most cases the difficulties are easily overcome. Having enumerated the advantages of cooperation with the Chinese, let me describe to you a cooperative agreement at Changsha between the Chinese and Yale which is now in full operation. Those who are seeking examples of such cooperation may, perhaps, profit from the recital of an actual experience.

This movement took a practical form in the summer of 1913, but Yale had been patiently and carefully paving the way since 1906. During these years the one aim was to cultivate friendship and good will with the Chinese, and to win Chinese interest and confidence in the Yale work. To this end, every effort was made to give practical assistance to the Chinese in such affairs as Red Cross work, combating epidemics, and in making effective sanitary reforms. So in 1913, when a large gift was secured in America for the erection of a new Yale hospital, the Chinese were at once interested, and appreciated the opportunity. On their own initiative, over eighty of the prominent gentry of Hunan, led by provincial officials, sent a joint petition to the governor, requesting him, in the name of the Hunan government, to enter into a working agreement with Yale for the immediate establishment of a medical school. This request was granted, and the agreement was signed in July, 1913, between Yale on the one side and the governor, representing the Hunan government, on the other. Thus was born the Hunan Yale Medical School.

I wish again to emphasize the fact that the cooperative agreement was developed at the initiative of the Chinese, but that the way was paved by a steadfast and definite policy on the part of Yale extending over seven years. In addition to opening a new medical school, with standards similar to those in the West, the cooperation also undertook to maintain two nursing schools for men and women, respectively, a hospital and a research department for the investigation of public health problems and diseases peculiar to China. By the agreement, the Hunan government is to provide the necessary school buildings, costing $150,000 (Mexican), nine acres of land, amounting to $50,000, and an annual sum of $50,000 (Mexican) for the maintenance of the school and hospital. Yale undertook to furnish a hospital costing $150,000 gold, and the salaries of fifteen doctors.

* Read before biennial convention of China Medical Association, Shanghai, Feb. 1-5, 1915.

Control is vested in a board of managers of twenty members, ten Chinese and ten from Yale. The board, when formed, is self-perpetuating, but undesirable members may be removed by a three-fourths vote of the board. In case of vacancy, the board has the right to elect new members, but such elections require a three-fourths vote of the members to become valid. Current business is in the hands of an executive committee, elected by and from the managers. The agreement provides for a probationary period of ten years, and is subject to indefinite continuation, if proved successful. Land costing 80,000 taels has been purchased adjoining the Yale campus. Of this sum Yale gave 20,000 taels, the Hunan government 50,000 taels, and the land owners 10,000 taels. A medical preparatory department and two nurses' training schools were opened in the fall of 1913.

Before the agreement was put to a practical test, it was feared by Yale that certain delicate matters would present practical difficulties. One of these problems was in connection with religious instruction, but the difficulty was easily met by a clause insisting on the importance to the society that physicians should be men of moral character, and providing that, while students were to have entire religious freedom, teachers were also to be free to give religious instruction. With a board whose Chinese representatives were chiefly non-medical men, it was feared that unreasonable interference on technical matters might impair the efficiency of the school; but it was soon found to be quite otherwise. The Chinese members voluntarily placed the entire responsibility in all technical matters in the hands of the Yale medical staff. Besides, the rules of the Hunan Yale Medical Association provide that professional management of the hospital and school shall be left with the two medical members on the committee.

The appointment and dismissal of teachers, it was feared, might become another serious difficulty. The Chinese might introduce their own friends, regardless of qualifications. But this fear was removed by leaving nomination for appointments entirely in the hands of the two medical members of the executive committee, and making dismissal of teachers require a three-fourths vote of the board of managers, on the recommendation of the medical faculty.

The difficulty of the language to be used as a teaching medium was also readily solved. The opinion of the Chinese managers was asked, and their decision was unanimous that English should be employed. It seemed evident to them that the difficulties in giving adequate medical instruction in Chinese, and the ideal of making this a first-class medical school, alike made the use of English imperative. Of course the premedical course, and perhaps part of the lower years of the medical course, would require more or less explanatory instruction in Chinese; but the opinion was unanimous and enthusiastic on the part of the Chinese that graduates should have a good working knowledge of English and that the more technical instruction should be in English.

In the midst of progress there came a serious setback. A small group of Chinese, claiming to represent the western medical profession of the province, from motives of jealousy and self-interest, attempted to wreck the Hunan-Yale scheme. At a time when Hunan was suffering from the effects of her declaration of independence from the central government (August, 1913), it seemed easy to ruin the scheme. The governor who had put the agreement through lost favor at Peking and was removed. This gave the opposition its opportunity at Peking, and a decision of the cabinet ordered the Hunan-Yale agreement to be canceled. For a time difficult problems confronted Yale. Analysis of the situation resolved it into two propositions:

1. Was it worth while to revive the cooperation, if an agreement officially made with the Hunan government could be so easily canceled at Peking?

2. If worth reviving, should Yale bring diplomatic pressure to bear at Peking, or should the Chinese use their persuasive influence on their own cabinet?

Yale unanimously decided to adopt the latter policy in the belief that if the movement could not be revived by reasonable explanation, no real cooperation could take place.

After securing the approval of the new governor, who quickly became a warm friend of the movement, representatives were sent to Peking to ascertain the nature of the opposition. They found that the objections, which were largely misrepresentations by the opposing party, were easily explained. Only one real issue was raised by the Peking government. Since the movement was the first of its kind, representing the cooperation of a private foreign body with a provincial government, Peking feared that it might later be used as a precedent by other foreign organizations whose motives might not be so sincere as those of Yale. Consequently, the services of thirty leading Hunan officials resident in Peking were secured to organize an association known as the Hunan-Ru'-chuen Educational Association, and an agreement similar to the original one was signed between it and Yale. The agreement met the formal approval and sanction of the cabinet, as well as of the Boards of Education, Finance, the Interior, and Foreign Affairs. The Ru'-chuen Association thus acts as a technical intermediary between the government and Yale. All the financial undertakings called for in the agreement are, in reality, carried by the government.

Thus the Hunan-Yale Medical School was revived. This time it has been placed on a still firmer basis because it has been registered with the central government as well as with the governor of the province. The cooperation is made stronger and more real because no foreign pressure was used in its revival. The movement has stood a severe testing. It was subjected to the scrutiny of the cabinet twice, was approved by three governors, and supported by two parties of opposite political views. The fact is significant that though at present the provincial treasury is depleted, and though the authorities are trying in every way to reduce expenses, educational and of other sorts, yet they are sincere in their desire to discharge their obligation to the Hunan-Yale Medical School. Two payments totaling $20,000 have been made, and a large building worth $50,000 has been reserved for the use of the school and hospital, pending the erection of permanent buildings.

The medical preparatory school with nineteen students, and the two nursing schools with thirty-five students, are now in full operation, and the Yale hospital is under the direction of the joint board. This represents the Hunan-Yale cooperation in medical education. It is taking place in Hunan, a province in which provincialism and local pride, to say nothing of nationalism, run high. If it is possible in Hunan, it must be possible in many other places in China. The time has

come when the Chinese look on cooperation with favor. Where it is sought it will be found; but progress must be patient and slow, if lasting results are to be obtained. The first essential is to remove all opposition, and to secure the friendship, good will and sympathy of the Chinese. To overcome opposition, the resources of Chinese friends must be sought. One man who has made friends out of opponents for the work in Changsha is an elderly Chinese doctor who has made both fame and fortune in the practice of Chinese medicine. When he was won over he gave up his lucrative practice and resigned the presidency of a Chinese medical school. Not only does he lend financial and moral aid to the Hunan-Yale school, but he sends many rich and influential patients to the hospital and on every occasion testifies to his conviction that Western medicine is better than Chinese.

When opposition is removed, indifference and apathy must be transformed into keen and proprietary interest. Indifferent cooperation is not productive of effective results. Unless the Chinese have an intense and vital interest aroused, cooperation is in name only. Here are needed those Chinese who command esteem and respect among their countrymen. Revival of the Hunan-Yale movement would have been difficult without such Chinese as General L. Chang, who from long contact with foreign institutions knew exactly what they stood for, and from his important official position as military adviser to the president, commanded the confidence of the people. Because of this, he was able to convert the previously uninterested officials in Peking into actual promoters of the movement. At Changsha Yale is fortunate in having another friend, the son of a governor, whose close connection with the gentry gives him great influence with his fellow provincials. Three principals of the three most important middle schools, as well as the commissioners of education and police, are among the members of the board of managers. Indeed, the strongest asset of the Hunan-Yale Medical School is the great and practical interest taken in its work by the Chinese members of the board. This interest has been worked up by this one man.

Hunan-Yale represents a thorough and wholesale cooperation in medical education with the Chinese. It is a brave attempt in that its success is yet to be proved. It is a risky enterprise in that the coalition has yet unforeseen difficulties to face. It means self-denial and sacrifice on the part of the foreigners concerned, but it is worthy of the most serious consideration. The time has come when cooperation with the Chinese is no longer an ideal dream but may be materialized in fact. The Chinese are getting to know the foreigners better, and to understand their real motives, and are prepared to unite with them in such movements as this. But the initiative must come from foreigners. Where cooperation is sought, it is given, but the degree of success must necessarily depend on the spirit in which it is entered. In proportion to the fairness, loyalty and enthusiasm of the foreign party will be the cordiality, interest and support of the Chinese.

Amount of Breast Milk at a Feeding.—The quantity of breast milk received by the baby at a single meal varies within wide limits. The largest quantity ingested at one meal may be two or three times as great as the smallest quantity taken at one feeding on the same day.—Isaac Abt, *Detroit Med. Jour.*, February, 1915.

THE PROGNOSIS AND TREATMENT OF TUBERCULOSIS OF THE KNEE IN CHILDHOOD*

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Methods of treatment and concern for the future are always subjects of interest and importance in the consideration of tuberculosis of the joints in children. The relation of treatment to prognosis in these cases is definite and close, yet the eager questions of the parents with regard to the future usefulness and appearance of the part are often extremely difficult to answer. In no joint is this condition of affairs more apt to arise than in the knee. Deformity, limitation of motion, shortening, and impaired function are such common end-results of tuberculous infection of this joint, that it is frequently advisable to establish with the parent an early understanding of these possibilities as well as the certain expectation of a long and tedious convalescence. Indeed, after the many months or even years of treatment, during which the child must continue an invalid, must be constantly attended and nursed, must have, as in many cases, frequent dressing of discharging sinuses and must be carefully watched for exacerbations and untoward symptoms, a termination of the acute process, even though attended by malformation or partial disuse, is gladly welcomed.

COMPLICATIONS OF TREATMENT

This rather pessimistic outlook, or at least, this uncertainty of prognosis, is due to many factors. Tuberculosis, in all its manifestations an insidious enemy, a slow-working yet a mighty destroyer, a smoldering fire with constant menace of terrible conflagration, makes no exception of the child's knee. Almost invariably there is a long history of partial disablement, pain, limp, and impaired general condition, before the child is brought to the doctor, and yet when seen, these same joints are quite as invariably hot, swollen, tender, held by spasm and otherwise markedly acute. In other words, the condition long standing has suddenly flared up and the parents have come to the realization that the child's "run down" condition will not "pass off" as they had hoped. Again, in the course of treatment, sufficient quiescence of the joint having been obtained in combination with increased general resistance, fixation is suspended and function resumed too quickly through the ignorance of an overindulgent parent or the hastiness or overconfidence of the physician. The result, recurrence of acute symptoms due to the stirring-up of the untreated focus, produces further damage to the joint, prolongation of treatment and prejudicial after-result. Improper fixation, the wetting or breaking of casts, neglect in carrying out the measures prescribed, inattention or inability to provide proper food, fresh air, rest, etc., all have their marked effect on the course and result of the disease.

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DISADVANTAGEOUS PATHOLOGIC CONDITIONS

Moreover, an examination of the pathologic changes involved in the process, clearly demonstrates the difficulties of treatment and of cure without deformity. Poor general condition is always present, as tuberculosis of the bones and joints is usually secondary to infection elsewhere, bacteria and toxins being carried by the blood stream to the part. In children, the favorite site of the initial involvement in the knee is usually near the epiphyseal line of the femur or tibia at the edge of the reflection of the synovial membrane. Whether the latter is involved before the bone, is not usually demonstrable, but it suffices to state that in this well-established case of tuberculous knee, in children at least, an osteal involvement shown early as an epiphysitis and later by a distinct bone focus and bone destruction, is present. This destruction of bone, usually accompanied by a roughening and destruction of the joint surfaces with either primary or secondary synovial disease, often becomes progressive and with the tissue detritus and pus which are the usual concomitants of tuberculous osteal disease, forms the typical picture of a partially and sometimes wholly disintegrated joint—clearly a difficult and stubborn condition with which to contend. It would seem, in the light of our present knowledge of the essentially imperfect, if not generally poor results obtained by our usual treatment of this condition, that the quickest, safest, and indeed, most successful method of treatment would be excision of the entire joint, doing away at once with the dangerous and deleterious process. This, without question, is the treatment *par excellence* in adults, in whom speedy return to function is the chief consideration. But in children, unfortunately, this method cannot be employed except as a last resort, for here we are confronted by the problem of growth. Any destruction or interference with even a small part of either epiphyseal line will produce shortening of the leg, often so great that it offers an end-result worse than that for which it is substituted. The treatment of this condition in children must, then, be conservation—and all our treatment, both general in an attempt to raise bodily resistance, and local by absolute quiescence to nullify all possibilities of strain or trauma to the affected part, must be directed to this end. That we are, however, asking nature considerably to extend herself in restoring form and function to a partially destroyed joint, is apparent.

SELECTION OF TREATMENT

Of equal importance with the foregoing in the determination of result, is the form of treatment employed. Before treatment can be instituted, however, a correct diagnosis must be made. There are certain positive facts which, taken in combination, point definitely to tuberculosis of the knee. These are, briefly, a history of long duration of limp and pain; trauma (in about a third of the cases); family predisposition or exposure to tuberculosis; exacerbations; loss of appetite, sleep, and weight; night cries; slight, but not marked, fever; a knee which is hot, swollen, tender, and held in flexion with spasm, boggy, rather than filled with frank fluid, with a synovial and often a bony thickening apparent; atrophy of calf and thigh; a positive tuberculin (von Pirquet) reaction with a relatively low leukocytosis; and an appearance by Roentgen ray which early shows in addition to fluid in the joint, a rarefication and enlargement of the epiphyses of both bones with a squaring of their corners (as seen anteroposteriorly) and a deepening and squaring of the intercondylar notch, with later a focus of bone destruction becoming apparent. The early diagnosis of tuberculous knee is often very difficult. Only fragments of the complete picture may be obtained, the local conditions may be obscure or confusing, and the roentgenogram is frequently negative. For this reason much valuable time may be lost before the true character of the disease is manifest, time during which the destructive process is rapidly progressing. It is also evident that the result of incorrect diagnosis may greatly influence prognosis, even though it be quickly revoked. Syphilis, scurvy, hemophilia, acute synovitis, osteomyelitis, toxic or infectious arthritis may all receive their appropriate treatment, none of which is beneficial, and many of which are distinctly prejudicial to the real condition. The mere neglect of the immediate inception of immobilization of the knee is deleterious, but the institution of treatment for, say, an acute pyogenic infection, that is, prompt incision and drainage, is distinctly contraindicated in an early tuberculosis. Indeed, the number and variety of operations to be attempted on a tuberculous knee in a child are distinctly limited. Secondary infections of long-draining sinuses or unhealed incisions may be expected with the possibility of a severe general, or occasionally fatal, infection following. Attempts at the eradication of the focus unless it is very definitely localized, or of diseased tissue, very rarely favor the course of the disease. Absolute rest and non-interference are our best weapons for combating the local condition.

GENERAL TREATMENT

That the non-operative treatment is the method of choice, to be employed so far as possible throughout the course of the disease, the results of the following cases treated at the Children's Hospital amply attest. These comprise all cases of tuberculous knees admitted to the clinic during a period of thirty years, from 1880 to 1910, inclusive, on which a satisfactory diagnosis and record have been obtained, and the end result of the treatment known. No case treated in the last three years has been reported, in order that a fair length of time might have elapsed before results were noted. The original number of cases has therefore been reduced from about seven hundred to two hundred and fifty-one, which latter number furnishes the data for the following study of end-result in relation to treatment in this affection.

The general treatment of these cases has varied but little during the time covered by the series, and as a rule was as conservative as conditions would permit. In brief, the usual treatment consisted of protection from motion and weight-bearing by fixation in a plaster cast in combination with a Thomas knee-splint, with or without traction, a high sole on the unaffected leg and crutches being supplied. The cast and splint were kept on and the child allowed to go about with crutches until marked improvement was shown, as evinced by lack of local heat and spasm. The cast was then gradually omitted and the splint altered to a convalescent form and later omitted altogether. In the acute cases in which there was much muscular spasm, pain and flexion deformity, rest in bed with traction to counteract the spasm and reduce the deformity was considered essential until the most acute symptoms subsided. Whenever possible,

deformities such as flexion or subluxation were corrected as well as possible, each time the plaster was changed. If correction of the deformity was not possible in this manner, it was performed under ether, manually or with the genuclast.

Operations were performed in 35 per cent. of the total number treated and in almost 50 per cent. of the cases reported. Of these by far the greater number were for forcible correction of deformity, this being done in almost half of the operations. Other operations for straightening in the more obstinate cases were tenotomy of the hamstrings, and osteotomy of the femur. In cases in which abscesses were found which did not rupture spontaneously, incision and drainage were usually performed, unless it was felt that rest and fixation would prevent rupture and promote absorption. Thirty per cent. of the cases presented abscesses at some time in their course, about three-quarters of which were incised, the operation being repeated in some cases and a few abscesses being aspirated. When discharge from sinuses or other acute symptoms persisted, arthrectomy or erasion was performed. This consisted of a cleaning out of the joint cavity, removal of diseased synovia, curettage of diseased cartilage and removal of bone foci and detritus. A straight leg with a stiff joint was the object of this operation, but when these conditions were not obtained and the discharge continued, excision or resection of the joint was resorted to.

RESULTS OF TREATMENT

In order to have some definite criteria on which to base the results of treatment, four arbitrary divisions of good, fair, poor and bad results were made as follows: *Good* represents full motion, or flexion to about 90 degrees with full extension, perfect function without subjective symptoms, and with a shortening of less than an inch. *Fair* represents a straight leg with ankylosis without pain or much shortening, or cases with slight motion provided the knee can be extended fully without pain. *Poor* represents cases showing any degree of flexion deformity with or without symptoms and with or without ankylosis. Those cases showing considerable shortening, without other symptoms, and all other cases which may be acute or in which apparatus is worn, are also grouped here. *Bad* represents cases showing improper function, pain and impairment of gait, whether from deformity, shortening, flail joint or any other secondary cause.

In noting the general results in all cases regardless of treatment or duration, it was seen that the good and fair results or satisfactory cases, were about twice the number of the poor and bad results. The oldest cases, that is, those in which a duration of treatment exceeded ten years, showed the best results, as might be expected. About one-third of the knees were ankylosed, which condition increased with the duration of the disease, while the number not healed and wearing apparatus was markedly decreased, in direct proportion to the duration.

RESULTS IN CASES WITH OPERATION

By comparison, however, of the cases in which operation was performed, of which there were one hundred and twenty, with one hundred thirty-one cases in which there was no operation, it was found that in 50 per cent. of the operations there were unsatisfactory results, while only 25 per cent. of the non-operated group were unsatisfactory. Likewise, in the latter group only one-quarter had flexion deformity, less than one-half those in the operated group, far less had limitation of motion, and less than half as many had ankylosis. On the other hand, almost as many were still acute or apparatus was still worn when the result was recorded. Without doubt in most of the cases with operation the course was more severe than in those with no operation, but the difference in the figures is nevertheless significant of the results which may be obtained by absolute rest and non-interference.

As to the results from the different operations, it is hard to tell accurately, as most cases had other treatment which probably had direct bearing on the result. Of the cases in which only one operation, or operations of a similar character were performed on one patient, the results showed that, with the exception of forcible correction of deformity which has a small balance in favor of a satisfactory result, and excision of the joint, as many patients failed to be improved as were benefited by operation.

RESULTS IN CASES WITHOUT OPERATION

In regard to non-operative treatment, as has been previously stated, about the same methods were used in all, the plaster and splint both being used in most cases. A differentiation of the results based on the patients wearing plaster only, those wearing splints only, and those wearing both, is of questionable value in consideration of the many factors entering into the results, especially acuteness and severity in the individual case, and the operative interference. Grouped so far as possible by distinctive treatment, however, the cases in which there were no operations appear to indicate that the best results were with splints only, although there is little significant difference between the various methods. This result with splints only may be very largely due to the fact that the few cases, twelve, receiving this treatment, were the most favorable for any form of treatment, but as it is also certain that the worst cases were treated by splint plus plaster, and that this result was better than the general average, the benefits of the withdrawal of weight-bearing with fixation are apparent.

RESULTS IN SEVERE CASES

Very little classification of results can be made on the basis of condition when first seen, as most cases presented the same general symptoms. Practically all were acute and showed some flexion deformity. The only practical differentiation which can be made in these cases (outside of those already made) is between those patients who received treatment in recumbency with traction, and those who did not, as in the most severe cases this treatment was almost universally given before the knees were put into plaster and splints. In studying this group, it was found that the results in the cases in which traction was used were much worse than the general average, and presented a very large percentage of non-healing. Moreover, in twenty-nine, or 70 per cent. of these cases, operation was performed later, as compared with 35 per cent. of all cases in which there was operation. This is another indication of their severity, and should not be taken as an index of the value of the traction treatment, for there is little doubt that the results would have been even worse without traction.

The only other differentiation of cases at admission which can be made is of those in which there was abscess. The results in these cases were shown to be much poorer than the general average, there being a marked predominance of the poor and bad results over good and fair, with a high percentage of cases in which there was deformity, cases of non-healing, and patients still wearing apparatus. It was, however, evident that the patients with abscess who were not operated on had far better ultimate results than those who were operated on, two-thirds of the former, and only one-third of the latter, having satisfactory results.

DURATION OF TREATMENT

The only estimate as to the length of treatment which can be given is by getting the average time from the first hospital visit to the last, limiting these data to those cases which were not acute, or presented no conditions requiring further hospital treatment, at the patients' last hospital visit. Of these, there were two hundred and twenty, one hundred and twenty-five not having been operated on. The average duration in the cases with operation was five and eight-tenths years, in those without operation four and two-tenths years. The former averaged, therefore, a year and a half longer treatment than those with no operation, which bears out in general all previously reported cases. The average duration in all two hundred and twenty cases was four and nine-tenths or practically five years.

PROGNOSIS

No definite answer may be given in any individual case as to the time required for a cure. Individual differences are very marked, and the length of treatment may be greatly influenced by general conditions, acuteness at onset, complications such as abscesses, operations, precision in carrying out treatment, etc. It is also difficult to say just when a tuberculous joint is cured, for some become acute after long periods of quiescence. In general, from the foregoing results, we may believe that with present-day conservative treatment, a satisfactory prognosis may be made in at least two-thirds of the cases of tuberculous knees in children, those patients presenting the most acute joints or with abscess on admission having the poorest prognosis. Operative procedures should be avoided so far as possible, most arthrotomies not only being unsuccessful, but also interfering with a favorable result and prolonging the duration of active disease.

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Securing Milk Under Difficulties.—The difficulties of securing milk for sick infants in the hospitals of the missions in China are great. The native cow is mostly a beast of burden and her milk is not abundant, and the difficulty of securing foreign cows with better productive capacity leads sometimes to such strenuous efforts as that related in regard to Dr. E. L. Bliss, of the American Missionary Board Hospital at Shaowu, Fukien Province. In order to secure a supply of milk for the hospital and to improve, incidentally, the quality of the cattle in the province, it was determined to secure a pair of foreign cattle from the mission farm in Chihli province, 1,800 miles away. Rev. E. D. Kellogg, accompanied by a native druggist, started on the long journey and brought back the animals, the round trip taking forty-six days, and the travel being by various modes of transportation, rail, large and small river steamers, river boats, Peking carts and several hundred miles on foot. The animals were landed in the mission in good condition, the cow furnishing much milk for the natives along the route, in some places the demand being far greater than the supply.

DANGERS AND INCONSISTENCIES IN SOME NOTABLE SHORT-TIME TREATMENTS FOR DRUG ADDICTIONS

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The Harrison Antinarcotic Act has precipitated an unusual number of drug cases on our hands. It seems wise, therefore, to warn the profession against a routine following of some of the more notable short-time treatments—such as the Lambert-Towns treatment and others based on the belladonna group of drugs or their active principles. I began to use the Lambert treatment shortly after its publication in THE JOURNAL.[1] Very soon, however, I found that, in the majority of cases, it was safer if modified. I have used it, with varying modifications, in a large series of cases and from the first have been a strong advocate of what is valuable in it. But there may be grave dangers in its use if applied as a routine to all comers, as seems to be advised by its promoters. There are patients who, owing to age or to general debility, are unable to withstand the heroic medication prescribed, and who cannot make the sudden readjustment to normal functioning that such rapid withdrawal necessitates. One of my morphin patients, a woman of 60, well-nourished, without apparent cardiac complications, was given the Lambert treatment carefully as directed. All seemed to go well until the third day, when she passed rather suddenly into a state of collapse. She became stuporous with a rapid and irregular heart, and stertorous and labored shallow breathing. The corneal and pupillary reflexes were abolished. There were signs of beginning edema of the lungs. Considerable motor restlessness presented itself through involuntary movements of the limbs. It was several days before she reacted to the cardiac and respiratory stimulants and oxygen employed. Another patient of the same age and of good constitution, seen later, who had been given this treatment for morphinism, passed, at the end of a like period of time, into a similar profound stupor from which she did not recover. The syndrome presented in these patients was very like that frequently seen in drug addicts following sudden withdrawal without treatment. Collapse in each instance is evidently due largely to the same cause—too rapid withdraw of the drug. The symptoms presented in all these cases resembled strongly those often seen in surgical shock. My records show a number of cases which, while not reaching so serious a state, showed alarming symptoms mainly attributable to cardiovascular paresis, while being given a straight Lambert treatment. It is strange that more attention has not been called to the kinds of cases to which such robust therapy cannot without danger be applied.

Especial caution should be exercised in treating certain cases of alcoholism. The alcoholic presenting the picture of predelirium tremens is very likely to be precipitated into active delirium by the administration of belladonna as prescribed by the Lambert treat-

1. Lambert, Alexander: The Obliteration of the Craving for Narcotics, THE JOURNAL, A. M. A., Sept. 25, 1909, p. 985; The Treatment of Drug Addiction, Feb. 18, 1911, p. 503; The Treatment of Narcotic Addiction, June 21, 1913, p. 1933.

ment. This predelirium is the stage of mild fleeting hallucinations, easily escaping observation; at this time the patient presents usually marked muscular tremor, restlessness and anxiety. On the whole, the Lambert treatment is contraindicated more frequently, and is of less value in alcoholism than in any other form of drug addiction. The alcoholic, from the standpoint of therapy, is a very different individual physically and psychically from the victim of the other narcotic drugs. In his case, generally speaking, there is no particular advantage in any of the so-called "specific" treatments; a judicious application, widely varying with individuals, of a sedative, eliminating, and supporting therapy is in most cases safer, practically as brief, and equally adequate. The most that we can expect ordinarily from drug therapy, in alcoholism, is the clearing up of the patient, and the quieting of what we term his craving. Permanent abstinence in the case of the alcholic will come, in the majority of cases, only when an enduring incentive has been established which is a stronger urge than the intoxication impulse.

It seems inconsistent to announce the permanent and complete removal, within a few days or even weeks, of the craving for habit-forming drugs. We must remember that this craving, dependent on perverted deep-rooted habits in mind and body, has become so dominant that its satisfaction is, in a sense, a biologic necessity. In reality the craving, in the real sense of the term, of the addict for a drug like morphin is rarely finally obliterated by a short-time treatment. It is safe to say that the appetite is but in abeyance so long as the patient is in a condition such that under given circumstances the craving will again spring into activity. There has invariably been produced in the habitué a marked lowering of resistance for withstanding pain either in the physical or the mental realm. Flight from pain, or the possibility of pain, has become an obsession. In circumstances, therefore, in which distress or the expectation of it arises, the individual is often helpless; in his panic of fear he rushes instinctively to that which, his memory informs him, will give him relief—his drug. He is under the yoke of his associative-memory processes; and in such times of stress his craving dominates him body and soul. Advocates of "specific" treatments warn against the first dose, or the first drink. It is rather our business to protect the patient, for a sufficient length of time, from conditions which may create what seems to him a necessity for the first dose, or the first drink.[2]

I do not mean to say that getting a patient off his drug is not an important step toward cure; it is an indispensable one. And for its accomplishment my experience has been that the Lambert-Towns treatment, adapted to individual idiosyncrasies, is our best method for morphin and allied habits. But this step is generally only a preliminary in any therapy making for adequate and lasting results.

That we cannot often look for cure from a short-time, or so-called "specific," treatment, is evidenced by the mental and physical changes which take place in an individual addicted to narcotics. These maladjustments have become established, on the part of the organism, often with great effort over a long period of time. The changes are manifest everywhere in the organism—in the mental life and character, in the secretory musculatory and circulatory systems, in the digestive sphere. In the digestive system, the distorted condition which has become habitual is partially revealed by the nausea, vomiting and griping which set in on sudden withdrawal of the drug. In the circulatory system, the rapid pulse arrhythmia and general cardiovascular embarrassment point to the dependence on the drug which has been established. Internal glandular secretions often undergo grave alterations. For example, a familiar finding in the morphinist is the absence of sexual capacity or desire. In the female the sexual aberration is further emphasized by the frequent disappearence of the menstrual function, a condition which is at times acompanied by an almost complete atrophy of the breasts. Marked eroticism frequently appears with returning sexual functioning. Another evidence of anomalous ductless gland activity is the fact that, after withdrawal, many of these patients show an unusual disposition to adiposity. Furthermore, I have seen very active hyperthyroid symptoms with great increase in the size of the gland follow withdrawal of morphin. Time is needed for righting such profound biochemic and physiologic disturbances.

Probably the gravest alterations—distorted judgment, emotional deterioration, character changes, etc.—occur in the mental sphere. These perverted mental habits present, ordinarily, the greatest difficulty in establishing ultimate cure; yet it is to these changes that least attention is usually paid. The mathematical schedule of therapy is addressed to the physical side, and after such administration, those in attendance often feel that they have done their whole duty, and the patient is likely to be dismissed with a complacent "Now you're off your drug; it's your own fault if you go back." As a matter of fact, comparatively few of these persons do go back to their drug deliberately. It is interesting to note that in cases of reversion the obloquy is almost always put on the patient; the question of the efficacy of the treatment rarely seems to arise. Furthermore, many cases of addiction are found to be an expression of a definite neurosis or psychoneurosis. Such cases can often be reached adequately only by psychanalysis. Again, faulty habits of living are frequently back of the addiction, and a correction of these, often involving a different environment, is necessary. To expect to cure a neurosis or psychosis, or bad environment, by means solely of intensive purgation and belladonna or scopolamin medication is simple folly. It is true that for certain cases the "specific" treatments prove adequate; but, in spite of apparent statistics, I believe that such cases are greatly in the minority.

In the matter of statistics, the term "cure," as applied to drug addicts, seems to be used in a vague and relative way. If by cure is meant permanent relief from the habit, and complete rehabilitation as to mental and physical usefulness, the statistics submitted by advocates of various treatments are of little value. If, however, the term "cure" implies merely that the patient is off his drug at the time of leaving the hospital or sanatorium, the statistics for cure will be high, but in the light of scientific knowledge regarding these cases, of little value as to prognosis.

While suggestion, within bounds, is legitimate, a serious weakness in the specific treatments is the fact that cure, so-called, is dangled before the patient's eyes as a kind of miracle; a marvelous transformation is to take place in which weakness shall become strength, temptation vanish, the victim take his place as equally efficient among his fellows, with little effort

2. Wholey, C. C.: Psychopathologic Phases Observable in Individuals Using Narcotic Drugs in Excess, Pennsylvania Med. Jour., June, 1913.

or suffering on his own part. We all know that character is transformed in no such way. I have found the most lasting results in those case. in which the patient has understood from the beginning that there is a fight on, and that from the first hour it is largely up to him. Indeed, I will not treat a patient who is not ready to give the needed cooperation; and I prefer to have the struggle undergone consciously, with realization of the effort and conquest that is being made. I do not throw my patients into a semidelirium in which they have little or no after-knowledge of what has gone on. Character fibers are not toughened by passing through any such twilight sleep.

Moreover, serious consequences may arise from throwing a patient into these automatic amnesic states, often induced by pushing belladonna or scopolamin medication to the limit of physiologic tolerance, in which there takes place an interference in the functioning of consciousness such as to obliterate the memory of events through which the patient is passing. This amounts to a dissociated state. There has been produced more or less disintegration of the personality, which brings about lessened capacity, later on, for coherent and coordinated functioning. This helps to explain the lowered efficiency so frequently seen in the recovered addict who is driven to the necessity of taking up an occupation of a less exacting and complex nature.

Some modifications, which seem to render the Lambert-Towns treatment safer and no less efficacious, for getting a patient off a drug like morphin, we employ, generally speaking, as follows: The belladonna mixture and purgatives are administered much after the Lambert plan, except that they are extended over two, or three, or many times, the length of the period outlined in the original treatment; and are given in correspondingly less intensive amounts. The belladonna mixture is given, when not contraindicated, at hourly intervals only if the patient is awake. Sleep is provided for from the beginning through such drugs as sulphonal, trional, veronal, paraldehyd, bromids, etc. An amount of the patient's narcotic sufficient to insure cardiac support and a fair degree of general comfort is given from the first. It has not been found necessary to give more than 2 grains of morphin at a dose, regardless of the accustomed daily amount, and even so much is rarely needed; it is administered before meals and at bedtime. The patient's drug is rapidly cut down until at the end of a week, or of two, or three, or in some cases longer, he is off his drug. Our experience has discovered no prognostic virtue residing in a puttylike stool scheduled to be delivered toward the end of a successful Lambert treatment. Always other and varying therapy, according to the needs of the individual, accompanies the foregoing medication. The patient is in no case ever made to conform to a set course of treatment.

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Engineering and Medicine.—In combating pestilence the profession of engineering has combined with that of medicine. When disease comes from without it requires the aid of a profession which deals with things external, and as disease always acts within it requires the aid of a profession which deals with things internal. It is idle to discuss whether the doctor or the engineer plays the greater part in preventing disease. Where so much has been accomplished by both, where the work to be done is so great, there are tasks enough and rewards enough for both professions.—George C. Whipple, *Science*, Oct. 23, 1914.

ROENTGENIZATION OF THE THYMUS GLAND IN GRAVES' DISEASE

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At the meeting of the Johns Hopkins Hospital Medical Society on Dec. 7, 1914, Dr. W. S. Halsted[1] discussed the effect of Roentgen-ray treatment of the thymus gland in Graves' disease. This work was undertaken at Dr. Halsted's suggestion and the object of this paper is to report the method of roentgenization employed in treating these patients, together with a brief review of the results obtained.

Within recent years, the various organs of internal secretion have been subjected to roentgenization in the treatment of this disease. Attention has been called by Stoerk[2] and Sinozersky[3] to a new field of usefulness for the Roentgen ray, namely, the Roentgen treatment of the thymus gland in hyperthyroidism or Graves' disease.

Sielmann,[4] in treating goiter patients by systematic Roentgen exposures applied to the thyroid, arrives at the conclusion that the ovaries, pituitary and other glands of internal secretion cooperate in bringing on Graves' disease, and that thyroidectomy does not remove all the cause. Mannaberg[5] suggests roentgenizing the ovaries in these patients and reports favorable results.

Ludin[6] has compiled articles from two hundred and eight authors on the Roentgen treatment of the thyroid in exophthalmic goiter and with the exception of a few, all report very encouraging results. Stoney[7] regards it as the treatment of the future, and of her forty-one cases, only one failed to show benefit; fourteen cases being entirely cured. Stegemann[8] irradiated the thyroid of patients with Graves' disease and found that they gained in weight from 3 kg. in three sittings to 20 kg. by the end of the seventh. Ludin remarks that the most serious objection to Roentgen treatment of the thyroid is the liability to transformation into a clinical picture of myxedema. Wagner,[9] Howell,[10] Holland,[11] Bergonié and Speder[12] have each reported a case displaying this tendency. Ledoux[13] urges exposing the thymus gland also in the

1. Halsted, W. S.: The Results of the X-Ray Treatment of the Thymus Gland in Graves' Disease, Bull. Johns Hopkins Hosp., 1915, xxvi, 55; Harvey Lecture, The Significance of the Thymus Gland in Graves' Disease, March 14, 1914.
2. Stoerk: Thymusbestrahlung bei M. Basedowii, Gesellsch. f. inn. Med. u. Kinderheilk. in Wien, 1913, xv, 231.
3. Sinozersky, A. A.: Roentgen Exposures to the Thymus in Treatment of Exophthalmic Goiter, Russk.-Vrach, June 20, 1914.
4. Sielmann: Diskussion zum Vortrag Kaestle, Reference in München. med. Wchnschr., 1911, xvii, 92; Zur Behandlung der Basedowschen Krankheit mittels Roentgenstrahlung, München. med. Wchnschr., 1914, lxi, 2125.
5. Mannaberg: Ueber Versuche, die Basedowsche Krankheit mittels Roentgenbestrahlung der Ovarien zu Beeinflussen, Wien. klin. Wchnschr., 1913, xxvi, 693; Semaine Méd., June 11, 1912.
6. Ludin: Die Behandlung der Strumen und des Morbus Basedowii mit Röntgenstrahlen, Centralbl. f. d. Grenzgeb. d. Med. u. Chir., 1914, xviii, No. 3, p. 205.
7. Stoney, F. A.: On the Results of Treating Exophthalmic Goiter with X-Rays, Brit. Med. Jour., 1912, ii, 476.
8. Stegemann: Die Behandlung der Struma mit Röntgenstrahlen, München. med. Wchnschr., 1905, lii, 1, 247.
9. Wagner: Basedow Debatte in der k. k. gesellsch. der Aerzte in Wien, Wiener klin. Wchnschr., 1909, v, 22.
10. Howell: Discussion in the Royal Society of Medicine, Electrotherapie Sect. XX, December, 1907, Reference in Fortschr. a. d. Geb. d. Röntgenstrahlen, 1907, xii, 286.
11. Holland: The X-Ray Treatment of Exophthalmic Goiter, Reference in Fortschr. a. d. Geb. d. Röntgenstrahlen, 1908, xiv, 149.
12. Bergonié and Speder: Contribution à la radiothérapie dans la maladie de Basedow, Arch. d'electric. méd., 1912, xii, 358.
13. Ledoux: Die Röntgenbehandlung der Basedowsche Krankheit, Jour. d. Physiothérap., 1912, x, 233. Reference in Therap. Monatsh., 1912, x, 906.

treatment of this disease and Kuchendorf includes the heart in the organs which should receive irradiation.

Kocher[14] states that in nearly 50 per cent. of all cases of Graves' disease the thymus shows either hyperplasia or tardy involution, which, however, is more evident in younger goiter patients, and suggests that these patients might be prepared for an operation on the thyroid by a course of thymus extract and irradiations of the thymus.

Friedlander[15] was probably the first to report the treatment of thymic enlargement by the Roentgen ray; and later, Myers[16] and Lange[17] also reported favorable results from this method. The patients (children) treated were suffering from thymic asthma, and marked atrophy of the gland followed roentgenization, together with improvement in the symptoms.

A number of investigators, Lange,[17] Rudberg,[18] Aubertin and Bordet,[19] Weill and Pehn,[20] D'Oelsnitz and Paschetta,[21] Regaud and Cremieu,[22] Sinozersky,[2] Stoerk[1] and others who have shown experimentally that Roentgen irradiation to the thymus gland causes atrophy and destruction of the gland tissue and finally varying degrees of fibrosis. Involution begins in from one to two hours after exposure and continues for a variable length of time, according to the intensity of the irradiation, regenerative changes gradually taking place after treatment had been discontinued for some time.

Regaud and Cremieu[23] in a recent publication have shown experimentally that after a dose of 14 H applied to the thymus gland of young cats, a reduction was demonstrable on the second day after irradiation. On the fifth day it was found to be 80 per cent. and by the fourteenth day 90 per cent. This reduction they found was due to necrobiosis and absorption of the thymus lymph nodes. The cells of the connective tissue are said to be transformed into Hassell's bodies. Also that regeneration begins about the fifteenth day in the lymphocytes that have remained intact, which finally leads by karyokinesis to complete *restitutio ad integrum*. They also found that the thymus could be completely destroyed with one irradiation of 50 H.

TECHNIC

The technic employed in this work has been uniform and the observations have been made from sixty cases treated by this method. Different types of cases and different stages of the disease have been dealt with. The treatments were divided into three series, with intervals varying from two to three weeks between irradiations. Six treatments were given in each series, over the anterior chest wall, starting in the first interspace on the right side close to the sternal margin, through a portal of entry 5 cm. in diameter. Irradiations were given in the majority of cases on six successive days in the first, second and third intercostal interspaces along the right and left sternal margin; however, a number of the patients received six treatments at one seance. The patients were then allowed to wait until two weeks had elapsed after the last treatment before beginning the second series of irradiations. They were again treated in the same manner as before and a like interval of time allowed before receiving the third or final series; therefore, no cases have received more than three series, or eighteen treatments, and some only one and two series comprising six and twelve treatments, respectively. Each individual irradiation consisted of a six-minute exposure, given through a 1 mm. aluminum filter at a focal and pastille distance of 20 cm. We have used the full pastille distance, that is, the same as the focal distance; and contrary to the general rule of inverse proportions of multiplying the reading of the pastille by four, we have multiplied by two and one-half; thus we have given a dose of 7½ H units through each portal of entry, this constituting the erythema dose.

Holzknecht, Sabouraud, Noire and Benoist radiometric systems were employed throughout the work, and the unexposed parts of the body were covered with a 1 mm. lead sheet, and the chest wall reinforced by a 3 mm. lead protector. A spark gap of 7 inches, tungsten target and Coolidge tubes with from 5 to 7 milliamperes of current were used.

Of the sixty patients treated, only two atypical reactions occurred. In one a brilliant blush came on thirty minutes after receiving the third irradiation and lasted as such for six weeks, gradually fading away with no vesiculations or other ill effects. The other patient, after receiving the last dose of the third series, developed, within twenty-four hours, acute prostration with elevation of temperature lasting for five days, followed by a complete cure. This case we are now able to explain by learning from the patient's brother, a physician, that she had experienced the same psychoneurotic attacks before.

Sixteen patients received the full three series or 135 H; of these, eight patients, or 50 per cent., are "apparently cured." Seven, or 43.75 per cent., have shown very marked improvement. One patient, or 6.25 per cent., not affected, failed to respond to treatment other than a mere psychic improvement. Nine patients, received two series with two cures, 22 per cent. Five patients, or 58 per cent., showed marked improvement, and two patients showed very little change, 22 per cent.

Twenty-four patients have received only the one series, and while the evidence is not sufficient to warrant drawing any definite conclusions as to the value of this small amount of irradiation, some of the patients have steadily improved since receiving their one and only series. Sixteen patients in this group showed no change; four slightly improved; two much improved, and two were operated on after the third irradiation.

The nervous disturbance and general health appear from our observations to be the first to show improvement, later a slowing of the pulse rate, and finally, improvement in the blood picture.

14. Kocher: Die Behandlung der Basedowsche Krankheit, München. med. Wchnschr., 1910, xiii, 680.
15. Friedlander, Alfred: The Diagnosis and Treatment of Enlarged Thymus, Am. Jour. Dis. Child., July, 1913, p. 38; Status Lymphaticus and Enlargement of the Thymus, with Report of a Case Successfully Treated by X-Rays, Arch. Pediat., 1907, xxiv, 496; Involution of the Thymus by the X-Ray, Arch. Pediat., 1911, xxviii, 810.
16. Myers: Congenital Laryngeal Stridos Apparently Due to an Enlarged Thymus Gland, Report of a Case, Arch. Pediat., 1908, xxv, 607.
17. Lange: The Present Status of the X-Ray Therapy of Enlarged Thymus, Am. Jour. Roentgenol., 1913, i, 73.
18. Rudberg: Studien uber die Thymusinvolution, Arch. f. Anat. u. Entwicklungsgesch. Leipsic, 1907, Suppl. Bd., 123.
19. Aubertin and Bordet: Action des rayons X sur le thymus, Arch. d. mal. du Coeur, 1909, ii, 321.
20. Weill and Pehn: Sur deux cas d'hypertrophie thymique traités avec succès par la radiothérapie, Lyon Méd., 1911, cxvii, 1448.
21. D'Oelsnitz and Paschetta: Les caractères de l'image radioscopique dans l'hypertrophie du thymus, Bull. Soc. Pédiat. de Paris, 1911, xiii, 462.
22. Regaud and Cremieu: Sur l'involution du thymus produite par les rayons X; résultats expérimentaux; deductions thérapeutique, Lyon Méd., 1912, cxviii, 5-20.
23. Regaud and Cremieu: Die experimentellen Grundlagen der röntgentherapeutischen Behandlung der Thymus-Hypertrophie, Strahlentherap., 1914, iv, 708.

The exophthalmos offered the greatest resistance, but in five cases this showed very marked improvement.

The evidence of improvement in the blood picture must be regarded with skepticism until the improvement has lasted a long time after irradiations have been discontinued, on account of the extreme susceptibility of blood to changes after Roentgen exposures on lymphoid tissue.

Stoerk[1] calls attention to the fact that practically the same blood picture change took place after roentgenization of a normal patient, as that occurring after irradiation of a Graves' patient; also that the blood picture curve in dogs after thymectomy and thymus extract injections shows practically the same change as when roentgenized.

The changes in the blood picture in our cases occurred principally with an increase in the neutrophilic element and a decrease in the small mononuclear lymphocytes.

CONCLUSIONS

Roentgenization will cure, temporarily at least, some cases of Graves' disease. It will effect an apparent cure in some cases of hyperthyroidism when other measures have failed. Intensive irradiation under strict and rigid technic has no bad or ill effect on patients with Graves' disease. From results in this and foreign clinics, evidence enough is at hand to warrant a more liberal employment of this treatment.

ROENTGEN-RAY KERATOSES ON HAND OF ROENTGENOLOGIST CURED BY RADIUM *

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My own hands had long been disfigured by these growths which resulted from my Roentgen-ray work and which occasioned some anxiety from the fact that many of my acquaintances in this specialty had developed fatal cancer from a similar origin. The lesions were of two types. A very few were raised, almost pedunculated, healthy looking fleshy tumors with a black pigmented apex. About thirty others were exceedingly hard black lumps projecting slightly above the surface of the skin. The smaller ones of this type had a tendency to undergo spontaneous exfoliation about once a year, leaving a healed surface somewhat depressed but surrounded by an indurated base. In a very few days a deposit of pigment granules would take place looking, under a magnifying glass, like particles of anthracite coal and in a week or two the black lump would have been renewed. The smaller lumps of this type could be curetted out at any time, leaving a dry, reddish, granular depression on which a similar growth was quickly reproduced. There were a few larger ones of this type which never came away spontaneously and which looked as if the bone would almost be exposed if they should be curetted out. Some of these were associated with deep painful fissures of the skin.

Eleven years ago, that is, in 1904, one of this type was removed by circular incision extending deeply into the flesh and not of a nature to be closed by suture, but being left to heal by granulation. This was examined microscopically and found not to be malignant. There remains to this day a small white indurated cicatrix.

For years I used to keep these unsightly excrescences under some kind of control by application of salicylic and lactic acids, which removed them temporarily. Another application which was not permanently successful was formaldehyd in 40 per cent. solution. About a year ago, at the suggestion of a general surgeon, two of the larger growths were treated with pyrogallic acid, 1 dram to collodion 1 ounce, applied three times a day. This application was not painful at first, but later produced two terribly sore fingers with suppuration underneath the area destroyed. Eventually, the growth came away and the ulcer healed; but the growth returned in a short time and all my suffering had been in vain.

If there had been only a few of these growths they would have been excised long since; but there never seemed to be a convenient time to give up the entire use of both hands long enough to have thirty growths removed surgically.

Dr. Caldwell had succeeded in curing certain Roentgen-ray lesions on his hands with radium and I had used this material successfully in many malignant and benign conditions not due to the Roentgen ray. I was moved on Nov. 11, 1914, to give it a trial on my own hands.

I selected one of the largest growths which formed a regular horn on the dorsum of the interphalangeal articulation on the left ring finger. The field of application was limited by a contrivance of my own[1] which I have found exceedingly convenient.

The protective sheet metal is rendered adhesive by coating it with double-faced adhesive plaster. Twenty mg. of radium element enclosed in a small glass tube covered with the thinnest soft rubber, was kept almost in contact with the skin for thirty minutes. The growth had been pared down almost to the bleeding point with a scalpel.

The result of the application was not perceptible for about ten days, then the skin became somewhat red and shiny. Twenty days more passed without any further decided change. During this whole month the pared-off keratosis had not sprung up again, as would have been the case if the radium had not been applied. On the thirty-first day, however, it looked a little doubtful and just at the same time the reddened skin around its edges was discovered to be loosened from the underlying tissues and in a few minutes the entire destroyed growth was removed like a scab. The surface beneath was pink and tender, but fully healed, and now, ten weeks after the radium application, the skin there is strong and presents no mark of any kind.

I have been treating all the other growths seriatim. Some have been slightly blistered, but even these could scarcely be called painful, though looking red and angry. They all come away in about a month, leaving a healthy surface beneath.

The histologic examination by Dr. F. E. Sondern gave the following findings:

The gross appearance of one of the original black crusts curetted out before treatment was that of a hard cornified epithelium showing some brownish-black pigmentation of

* Case exhibited before the New York Roentgen-Ray Society, Jan. 12, 1915, and the Surgical Section, New York Academy of Medicine, Feb. 5, 1915, and reported at the Western Section of the American Roentgen-Ray Society, Chicago, March 3, 1915.

1. Tousey, Sinclair: Radium and Roentgen Therapy Facilitated by Double-Coated Adhesive Plaster, New York Med. Jour., Dec. 26, 1914.

the outer exposed surface. The scales have an imbricated formation and are rather brittle in consistency. The surface that was in opposition to the skin lesion was slightly saucer-shaped and has a gray color devoid of pigmentation. Microscopic examination shows marked keratosis of the proliferated upper strata of epidermis. The pigmentation noted above is of very superficial extent. The destroyed growth which came away a month after the radium application showed no essential difference from the above except that there was much less marked pigmentation.

Evidently Roentgen-ray keratoses, while in the precancerous state, are curable by radium applications.

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TISSUE EXTRACT AS A HEMOSTATIC

A PRELIMINARY REPORT *

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For some time we have been carrying out experiments with various preparations which increase the coagulability of the blood and would therefore be expected to be of value in stopping hemorrhage. The most useful of these preparations has been found to be one made from tissue. At first homologous tissue was used—in the case of bleeding in human beings, human uterine tissue; more recently, however, the liver or the brain of cattle has been employed. This tissue is obtained fresh from the slaughter-house, washed thoroughly free from blood, ground up in a machine, extracted in salt solution in the refrigerator and then filtered. In its preparation, aseptic precautions are observed as far as possible. The extract, which contains some fine suspension of tissue in addition to tissue juice, is made up with 0.3 per cent. of trikresol and preserved in this way. Aerobic and anaerobic cultures of this fluid have been found sterile. In addition to this liquid preparation, a powder has been prepared—the tissue has been desiccated and then finely ground up in a mortar.

Thromboplastic preparations treated with this small percentage of trikresol have been found to maintain their potency for at least a month. This is a distinct advantage. The difficulty has been that these preparations rapidly undergo autolysis with the formation of antithrombic substances, rendering them not only inert, but of negative value.

It is not intended in this brief report to enter into the details of our experiences with this product. We have found, however, in animals, that bleeding following a skin incision or incision into the liver is quickly checked by the local application of these preparations, and that when it has been given intravenously, for example, 2 c.c. of a 10 per cent. solution injected into the ear vein of a rabbit, it has been possible to shorten the coagulation time by one half. In human beings we have had only a very limited experience with this thromboplastin given intravenously, having as yet confined ourselves mainly to its local use. Recently it rendered most welcome service when applied locally in two cases of hemophilia. One of these cases, a boy aged about 9 years, who has been under our observation for a year or more, was sent to the hospital on account of bleeding from the tongue which he had bitten while playing. As is so frequently the case in hemophilia, the bleeding was a mere oozing, which at first appeared to be of insignificant importance; it continued unchecked, however, in spite of the local application of fibrinogen, pure thrombin, calcium solution, gallic acid, serum and coagulose. The last-named preparation, as well as horse serum, was also injected subcutaneously, but without effect. After the boy had been bleeding almost continuously for four days, as he manifested increasing anemia and his pulse was becoming weak and his general condition critical, it was decided to obtain a donor and perform a transfusion on the following day. On the evening in question, however, as a last resort, a preparation of tissue extract was made from a uterus which had been removed in the operating room that very day. This was applied locally with almost instantaneous effect; the bleeding ceased and did not recur. In the test tube, the addition to blood of this tissue extract, which in the laboratory we have termed "thromboplastin," brings about coagulation with almost explosive rapidity. In the case of oxalated plasma (calcium must also be added), the clotting proceeds so quickly that no fibrin threads can be seen in the transparent clot. It is therefore to be expected that a substance with such properties would be especially indicated in hemophilia—a disease in which the primary, if not the entire defect, consists of a delay in the coagulation of the blood.

A second case bore out this supposition. This concerned a boy about 5 years of age, a marked bleeder with a pronounced family history of bleeding. The coagulation time of his blood had frequently been found to be remarkably delayed; ten drops at times took over three hours to coagulate in a small flat-bottomed tube. One day last December he began to bleed from a tear of the frenum of the tongue, and after various hemostatic measures had been resorted to in vain, he was referred to the Research Laboratory. There was found to be a soft clot incompletely covering the wound, from which there was slight but continuous oozing. On removal of this clot, the blood flowed more freely. Thromboplastin was applied on cotton for a few minutes, with the result that the bleeding ceased at once and did not recur.

These two cases seem to establish the value of thromboplastin in hemophilia. It remains to be ascertained whether it will be of value in purpura, a condition so frequently confused with hemophilia, but which is not characterized by a greatly delayed coagulation time, but by a marked decrease of platelets. It has been effective in controlling hemorrhage when the blood is normal, for example, after tonsillectomy, and therefore may be found of value in checking the bleeding which so frequently disturbs the operator in the surgery of the nose, brain, the abdominal organs, etc. When given intravenously, thromboplastin may prove to be of aid in checking various acute internal hemorrhages which are the result of ulceration or rupture of the vessel walls.

16 West Eighty-Sixth Street.

* From the Research Laboratory, Department of Health, New York City.

Failure to Meet Liabilities Means Bankruptcy.—Sick people are an expense to the state, whether the expense be borne by the state or by individuals, for the wealth of the state is but the aggregate wealth of its people, and any state that will not assume the duty of caring for the public health will fail in its competition with other states.—H. L. Sutherland, *Bull. Mississippi State Board of Health.*

Special Article

PRACTICAL PHARMACOLOGY*

(Continued from page 1322)

XVI

DRUGS WHICH STIMULATE SYMPATHETIC ENDINGS

EPINEPHRIN

Oliver and Schaefer investigated the actions of extract of the suprarenal gland previous to the isolation of an active principle by Abel in 1897. This active principle has been prepared by many workers, by whom it has been given different names, including "epinephrin," "suprarenalin," "supracapsulin," "adrenin" and "adrenalin," the last being the commercial name by which it is commonly known. The synthetic preparation has likewise received a number of names, including "homorenon" and "l-suprarenin synthetic."

The epinephrin obtained from the gland is levorotary, but the artificial is either levorotary or dextrorotary, or it may consist of a mixture of these two. Levorotary epinephrin is of uniform activity, so long as it has not undergone decomposition, to which it is prone, whether it is derived from the gland or prepared artificially. The market supply of artificial epinephrin is levorotary.

Dextrorotary epinephrin is only about one-fifteenth as active as the levorotary, according to Cushny. Mixtures of the two forms are of variable activity.

Epinephrin stimulates the sympathetic myoneural junctions in muscles. Elliott has stated it as a law that action of epinephrin on these connections between any given nerve and its muscle proves that the given innervation is of the sympathetic system—in other words, that epinephrin acts only on the endings of the sympathetic. It is also true that it acts on all of these, with possibly one exception, and we shall see that the innervation of the sweat-glands in the skin, which is always attributed to the sympathetic, behaves toward many drugs, including atropin and pilocarpin, as though it belonged to the parasympathetic system. Epinephrin does not act on them.

This conception of the actions of epinephrin simplifies its pharmacologic study, for the actions of epinephrin on any structure of the body are simply those of stimulation of the sympathetic.

When this stimulation results in inhibition, as it does in the non-pregnant uterus of some animals, then epinephrin also causes inhibition; but if stimulation of the nerve causes motor effects, as it usually does in the pregnant uterus, then epinephrin also causes motor effects. A given dose of epinephrin, however, varies widely in the intensity of its action in different organs, and these differences must be understood in order that epinephrin may be used therapeutically.

When it is injected intravenously no pronounced action is observed on the higher parts of the central nervous system, and the effects on the medullary centers are mainly secondary to the rise of blood-pressure. For example, the heart is accelerated at once after an intravenous injection, because of the stimulation of the sympathetic myoneural junctions, or endings, as we shall call them for convenience, in the heart; following this the vagus center is stimulated by the higher blood-pressure, and the heart is slowed. The action on the respiratory center is somewhat peculiar, resulting in an interruption of respiration, followed by a period during which the rate and the depth are increased, interruption and augmentation alternating.

The most prominent effect which follows the intravenous injection of epinephrin is the sudden high rise of blood-pressure, which is comparable to that seen after the intravenous injection of convulsive doses of strychnin. This is due to the increased heart-rate and strength of beat and to the constrictor action on the vessels. In practice this sudden rise of pressure is avoided by injecting very dilute solutions slowly. The heart soon becomes much slower and the blood-pressure falls below normal and then returns to its original level. The cause of the extreme brevity of the action of epinephrin on the vessels has been the subject of much debate. Apparently the action lasts only so long as the drug is actually in course of penetration into the endings, and when equilibrium is reached between the concentration of the drug in the blood and that in the nerve-endings the action ceases. It has been shown that the musculature of the vessel walls does not become fatigued so readily, for the high blood-pressure can be maintained almost indefinitely by the slow, continuous injection, and the destruction of the drug in the blood is not sufficiently rapid to account for the fleeting nature of the action.

Epinephrin does not affect the vessels of all areas equally, some being much less under the control of the sympathetic than others, and the cerebral, pulmonary and coronary arteries react so slightly that it has been denied frequently that the drug has any influence over them. The larger trunks of the pulmonary artery do, however, show marked constriction, the primary branches less and the smaller twigs little or none.

There are reasons why the coronary arteries should often behave in a manner opposite to that of the vessels of other large areas. It has been found that exceedingly small amounts of epinephrin—much less than those required to increase the general blood-pressure—cause constriction of the coronaries; with moderate amount, such as cause a rise in the general blood-pressure, the coronaries show at most a fleeting constriction and a rapidly following dilatation.

The necessity for the difference in the behavior of the coronary arteries and those of the general arterial system is readily apparent. When the general blood-pressure rises, the heart must perform more work, which would be impossible if its supply of blood were diminished essentially, for it has been shown conclusively that the functional capacity of the heart and its blood-supply are very closely related. If the rise of blood-pressure following the injection of epinephrin were attended with constriction of the coronaries of sufficient degree to interfere seriously with its supplying blood to the heart, the latter would be exhausted rapidly. This discussion bears on the action of other drugs which affect the heart and the general circulation, and it may be accepted as a rule that no drug which increases the work of the heart can interfere seriously with its blood-supply if the condition of the heart improves under its use. Mention of this will be made when digitalis is under discussion. Epinephrin stimulates the vasodilators as well as the vasoconstrictors, in the general circulation, but the action on the latter usually predominates, at least for a time.

* This is the sixteenth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

When the vasoconstrictor nerves are paralyzed by apocodein or ergotoxin, the administration of epinephrin results in stimulation of the dilators from the beginning, and the primary action of epinephrin then causes a fall of blood-pressure.

This secondary dilatation which follows the constrictor effect of epinephrin may become annoying at times. If epinephrin is heated to a temperature of 120 C. (248 F.), the constrictor action is lost while the dilator is maintained, and a similar change may apparently take place when the solution has been kept open for a time. At least one of us (Hatcher) has seen a specimen of which even small doses caused a rapid fall in the blood-pressure without any preliminary rise. The specimen had been kept on hand, but unopened, for some weeks.

Epinephrin causes blanching of the mucous membrane to which the solution is applied, resulting in relief in various inflammatory conditions, but the frequent application with alternate constriction and dilatation may ultimately give rise to hypertrophy of the mucous membrane, with a chronic inflammatory condition. Secondary hemorrhage may follow the use of epinephrin when the vascular dilatation succeeds the constriction, and a fall of blood-pressure may succeed its use in shock of minor importance.

The pupil behaves differently to epinephrin in different animals; in man epinephrin has little effect under normal conditions, but in exophthalmic goiter the sympathetic nerve to the eye shares with other sympathetic nerves an increased susceptibility to stimulation; epinephrin then causes dilatation of the pupil. Hence this reaction may become of some diagnostic importance in cases of suspected exophthalmic goiter. It is possible that the reason for the increased effect of epinephrin in exophthalmic goiter is that the blood contains a larger amount of epinephrin than normal, and that the sympathetic is kept under more active control by it, but this hardly seems probable if it is true that epinephrin is effective only while it is actually passing into the structures on which it acts.

A similar mydriatic action occurs with epinephrin in pancreatic diabetes.

The application of epinephrin to the eye causes constriction of the vessels of the conjunctiva and increases the mydriatic action of cocain. We have already seen that cocain increases the constrictor action of epinephrin.

The uterus behaves differently toward stimulation of the sympathetic in different animals, and in some it responds with contraction in the later stages of pregnancy, but not in the virgin. The human uterus during pregnancy responds with contraction to sympathetic stimulation; consequently it responds to epinephrin with contraction, and so actively that even the subcutaneous injection of epinephrin, which does not affect the blood-pressure to an important degree, causes uterine contractions. This is of therapeutic importance, in that it permits of the use of epinephrin after delivery of the placenta in securing firm contraction of the uterus without increasing the blood-pressure. Increase of blood-pressure is undesirable, since the object is to prevent post-partum hemorrhage.

Epinephrin acts on the heart in various ways. It affects the heart directly, causing an increased force of contraction. It also accelerates the rate and increases the energy by stimulating the sympathetic. This and the vasoconstriction induced cause an increase of blood-pressure which acts on the vagus center, producing a secondary slowing of the rate. When the vasoconstriction ceases, as it does in two or three minutes after the injection is completed, the blood-pressure falls, and the heart is again accelerated by the stimulation of the sympathetic, or it may be that the increased rate is due to the lowered blood-pressure, since the heart normally responds to lowered blood-pressure by increase in rate.

So remarkable is the action of epinephrin on the heart that it may sometimes be restored to normal rhythm after having been stopped by ether. On the other hand, there are few drugs which are capable of causing a normal heart to stop more promptly than an overdose of epinephrin or a too rapid injection of even a normal dose. Intravenous injections of epinephrin must be made with extreme caution. It will be recalled that other drugs are also very much more active by intravenous injection than by other modes of administration, and while this method is essential in some cases, it must be looked on as suitable only for emergencies.

The action of epinephrin on the intestine is that of stimulation of the sympathetic, but the action is too brief to admit of its therapeutic application.

Epinephrin is one of the few alkaloids in the materia medica which are not absorbed from the gastro-intestinal canal with such rapidity as to induce any appreciable effect. When injected subcutaneously it causes an unimportant rise in blood-pressure, but, as previously stated, enough of it is absorbed to cause tonic contraction of the uterus when it is administered after the delivery of the placenta. Intramuscular injections are followed by a greater rise of blood-pressure than are subcutaneous injections, but not nearly so great as that following the intravenous injection. The intense constriction of the vessels in the immediate region of the injection retards the absorption.

Epinephrin is absorbed from the mucous membrane of the nose, throat, mouth, urethra, vagina and rectum.

Epinephrin is destroyed almost immediately in alkaline solution, and it was suggested that the brief action after intravenous injection might be explained by its destruction in the alkaline blood. The blood, however, is now known to be practically neutral in reaction, and epinephrin mixed with blood and allowed to stand twenty-four hours is not totally destroyed, but if oxygen be passed through the blood after the addition of epinephrin, the latter is destroyed rapidly. Epinephrin is also destroyed in the other tissues.

Many biologic tests have been proposed for estimating the amount of epinephrin in specimens taken from the circulating blood, but most of the reactions which have been proposed are given by other substances; hence they have only a negative value. That is, when the blood fails to respond to these tests, epinephrin may be considered as absent; at least, no more than traces can be present. A recently proposed test of extreme delicacy, which is said to respond only to epinephrin among the substances which one might expect to find in the blood, consists in the perfusion of the vessels of an isolated limb of the frog with the blood to be tested, which is added to Ringer's solution in such dilution that it just causes constriction. One part of epinephrin in 800,000,000 of the perfused fluid causes active constriction.

Solutions of epinephrin decompose on exposure to light and air, becoming pinkish and later brown in color.

THERAPEUTIC USES

The principal therapeutic indications of epinephrin have been indicated, for nearly all of these depend on its constrictor action. The circulatory effects may be utilized when a rise of blood-pressure is desired; where it is necessary to maintain an increased blood-pressure for some time, resort may be had to slow intravenous injection of a very dilute solution (1:100,000), but there are many difficulties in the way of maintaining the injection for prolonged periods. It should be noted that the administration of epinephrin may result in an increase in a hemorrhage, quite as well as in a decrease. Nature lessens hemorrhage by a fall of blood-pressure not by a rise — the latter occurring only when the circulation in the nervous centers becomes insufficient to sustain life.

Epinephrin finds its greatest field of usefulness in local applications for constricting the vessels of mucous membranes, and in bleeding areas. It is added to solutions of cocain to delay absorption and thus prolong and intensify the anesthetic action.

Applications of epinephrin to the nasal mucous membrane during an attack of hay fever or acute catarrh cause immediate shrinking of the inflamed tissues, affording prompt relief. The action is brief, but if the patient remains quiet in a warm room the relief is much more lasting. As previously stated, dilatation commonly follows the constriction after application to the nasal mucous membrane, and if the drug be repeated too frequently for prolonged periods, chronic inflammation occurs.

Epinephrin is used in bronchial asthma, but as the cause of this condition is unknown, the mode of action of epinephrin is not understood.

It is sometimes injected subcutaneously—not intravenously—after the delivery of the placenta to induct firm contraction of the uterus, preventing hemorrhage.

Epinephrin has been suggested as an antidote to strychnin, but it increases the action of that alkaloid on the cord and cannot be considered as in any way antidotal, though strychnin is said to be antagonistic to the depressant action of epinephrin. The action of the latter is usually so rapid after fatal doses that little time is available for treatment.

HEMORRHAGE

When hemorrhage results from injury to a vessel which can be tied, the latter treatment is obviously indicated; but when it occurs in an inaccessible region, or results from injury to large areas where capillaries are involved, resort to drugs is often necessary. The most diverse methods have been employed in attempting to stop hemorrhage from inaccessible vessels; but since bleeding has a strong tendency to cease spontaneously owing to the formation of a clot when the pressure falls sufficiently, it is difficult to define the rôle of drugs, and when success attends their use, they are too frequently credited with the result when they have actually done harm, or had no appreciable effect.

The results of experiments with drugs in hemorrhage are contradictory, and it is impossible to state just what value many of these have under different conditions.

Epinephrin stops capillary hemorrhage, but when the constriction has passed, dilation and increased oozing may occur. A laboratory experiment serves to illustrate the natural control of hemorrhage and the effects of the injection of epinephrin during bleeding. If the dog's chest be opened under ether anesthesia, and a section of the chest be removed, there is at first a copious hemorrhage from numerous arteries which are cut across; but with the exposure of the thoracic cavity, there is a sudden fall of blood pressure and the hemorrhage ceases almost completely; if epinephrin, or other vasoconstrictor be injected into a vein, the blood begins to spurt from numerous arteries. This continues until the constriction passes, or until the loss of blood causes a great fall in the pressure.

There is a superficial similarity between the action of heat and that of epinephrin. When a bleeding finger is dipped in water, the bleeding increases temporarily, because the vessels in the finger dilate while the general blood pressure is unaffected, of course; when the finger is removed from the hot water, constriction soon takes place and the retardation of the flow favors the formation of a clot.

It has been said that certain vasoconstrictors lessen hemorrhage by favoring the formation of a clot, after temporarily increasing the bleeding, in the manner described above.

Whether such a drug will do harm or good in a given case depends on factors which cannot always be determined. If the loss of blood has been so great as to have reduced that in the body to the point at which further loss will be fatal, it is obvious that the sudden rise of pressure and the consequent loss of blood may prove fatal promptly; but when the fall of pressure does not suffice to stop the flow or permit of the formation of an effective clot, it may be better to suffer the slight additional loss if clotting will ensue. It can only be said that our knowledge on this point is wholly unsatisfactory, and interference will often prove disastrous, at a time when one must feel the urgent need of action.

Tannin, ferric salts, including the solution of ferric subsulphate or Monsell's solution, alum and dilute acids, such as vinegar, are among the best of the astringents for local application to stop bleeding by favoring the formation of a clot.

Since the fall in blood pressure is the natural means of favoring clotting, it may be advisable to administer a vasodilator early in severe hemorrhage before the pressure has fallen dangerously low; amyl nitrite, sodium nitrate or nitroglycerin may be used in an emergency.

It would be preferable to lessen the circulation by slowing the heart, if this could be accomplished without causing an increased force of the individual beat, for the stronger impulse tends to dislodge clots, and the mechanism controlling the circulation usually results in stronger beats to compensate for any slowing.

Gelatin has been used to some extent in solution for hypodermic injection to promote the formation of a clot in aneurysm and to arrest hemorrhage. It is sometimes contaminated with the spores of tetanus which are not killed by boiling for a few minutes, and many cases of tetanus have been reported from its injection.

Gelatin is used in making capsules for taking drugs in powdered form, and for making glycerinated gelatin used as a base for suppositories.

DOSAGE

The dose of epinephrin will obviously depend much on the purpose for which it is employed. It is applied to the nasal mucous membrane in the form of a spray of the 1:1,000 solution for hay fever, catarrh, or to reduce the swelling of the turbinated body. From 0.2 to 0.3 c.c. (3 to 5 drops) of a 1:1,000 solution may be added to a solution of cocain for subcutaneous injection to delay absorption and prolong local anesthesia. Much larger doses are sometimes injected subcutaneously in order to secure bloodless fields of operation. No harm follows unless the dose is excessively large, because of the slow absorption, but when the dose exceeds 0.5 mg. (1/125 grain), care must be taken to see that the hypodermic needle does not enter a vein.

When epinephrin is injected intravenously to increase the blood-pressure in shock, a solution of 1:10,000, or even a weaker one, should be used, and this should be injected very slowly, 1 c.c. (15 minims) in five or ten minutes being sufficient to maintain slight rise in the pressure. For capillary hemorrhage a solution of 1:1,000 is used. It is said that little improvement is to be expected in most cases of bleeding from gastric ulcer, because of the dilution to which the epinephrin is subjected in the fluid in the stomach. Epinephrin may be used in far larger doses by the mouth than intravenously, and if it fails to stop the bleeding it will probably do no harm. From 5 to 10 c.c. (from 1 to 2 teaspoonfuls) of a solution 1:10,000 may be used.

For the relief of bronchial asthma 0.6 to 1.0 c.c. (10 to 15 minims) of a solution of 1:1,000 subcutaneously is recommended, or sprayed into the nose at the beginning of the attack, or 1 mg. (1/60 grain) may be used in the form of a tablet which is allowed to dissolve in the mouth.

When the heart stops suddenly during the administration of ether or chloroform, it is essential that the beat be restored immediately, for the chambers of the heart are then filled with blood containing the anesthetic, and especially when this occurs with chloroform, the heart is rapidly paralyzed and rendered incapable of contracting again. If epinephrin is injected intravenously in such cases it must traverse the right heart and the pulmonary circulation before it can act on the left ventricle, involving the loss of valuable time. If the injection is made intravenously the heart should be massaged through the chest wall at the same time. Delay is avoided by injecting the solution of epinephrin, 1 c.c. (15 minims) of 1:10,000, directly into the heart by means of a fine hypodermic needle.

MATERIA MEDICA

Epinephrina.—Epinephrin, N. N. R.

This substance, commonly referred to and used as adrenalin, is chemically described as 1,2-dihydroxy-4[2] methyl-amino ethyl-4[1]-ol, benzine. It is the blood-pressure-raising principle of the suprarenal gland, also produced synthetically. It is official in the French, Italian and Belgian pharmacopeias as "adrenalin," and in the German Pharmacopeia and in the supplement to the Netherlands Pharmacopeia as "suprarenin." Among the names, other than those already mentioned, that have been applied to epinephrin or epinephrin-like substances in literature are "adnephrin," "adrenal," "adrenamine," "atrabilin," "chelafrin," "epinenan," "haemostasin," "hemisine," "ischaemin," "paranephrin," "renaglandin," "renastyptin," "renoform," "supranefran," "suprarenadin," "l-suprarenalin," "suprarenaden" and "suprenalin."

The several mixtures of epinephrin with cocain, eucain and other substances have also been given special names, so that the nomenclature of this article and its simple mixtures would probably total at least one hundred titles.

Epinephrin, as such, occurs in commerce as a finely crystalline white or yellowish white powder, odorless, having a slight bitter taste. The free base is practically insoluble in water and the product is usually dispensed in the form of an aqueous, usually acid, solution, 1:1,000, of one of it salts. Epinephrin is oxidized readily with the development of a red color; and such red, pink or turbid solutions should not be used.

Epinephrin is frequently used in the nose in the form of a spray. For this purpose the commercial 1:1,000 solution may be diluted with 4 parts of water or physiologic solution of sodium chlorid, and if necessary a sufficient amount of cocain hydrochlorid added as in the following formula:

	C.c. or Gm.	
℞ Solution of epinephrin, 1:1,000	6	f3 iss
Cocain hydrochlorid.....	0.6	
Distilled water or physiologic solution of sodium chlorid to make.....	30	f3 i

For use in suppositories epinephrin hydrochlorid is preferable to epinephrin itself because of the greater solubility and consequent activity of the salt. Suppositories of epinephrin may be prescribed by directing that each suppository contain approximately 0.001 gm. (1/65 grain) of epinephrin hydrochlorid and a sufficent amount of oil of theobroma to make 1 gm.

PITUITARY

The pituitary body consists of two portions, the anterior and posterior lobes. Various extracts of the posterior lobe have been prepared under different names, and some of them are marketed with extravagant claims. The active principle of these extracts is unknown, and it seems probable that there are several principles present in variable proportion in the different commercial preparations, which show a total want of uniformity in their actions, both qualitative and quantitative.

The extract of the posterior lobe causes a slight rise of blood-pressure when injected intravenously, and while this action is usually more prolonged than that of epinephrin, the difference is not very important, and is more than counterbalanced by the uncertainty of the action.

Pituitary extract causes contraction of the pregnant uterus, and may be used sometimes to hasten delivery. Published reports indicate that it is dangerous when rapid delivery is impossible. Its use in labor should be limited to normal cases after full dilatation of the cervix has occurred. It has also been used in cases of paralytic distention of the intestine, but this use is as yet on an experimental basis.

Active diuresis is commonly seen after its injection; some extraordinary results have been reported in experiments on goats in which the secretion of milk was said to be increased.

Different investigators have reported widely different results with pituitary extracts. The introduction of these preparations is comparatively recent and the indications for their use as well as the proper dosage, etc., are not yet established.

(To be continued)

Preventogram.—Good health is good cheer; therefore look always to good health.—*Buffalo Sanitary Bull.*

Therapeutics

INTESTINAL STASIS

With evidence of general chronic disturbances, we should not be satisfied with the diagnosis of constipation. Intestinal stasis may lead to an enterogenous toxemia that will raise the blood-pressure, irritate the kidneys, congest the liver, irritate the brain, and cause sleeplessness and future organic disease.

Intestinal stasis may be caused by ptosis, adhesions, incompetency of the ileocecal valve, megacolon, dilated rectum and a tight sphincter. Reflex causes should be remembered, and the most frequent are chronic appendicitis, ulcer, chronic abdominal inflammations (whether pericolitis, pelvic or gall-bladder), and any kind of chronic abdominal pain such as ovarian, or that due to calculi in the kidneys or gall-bladder. Malpositions and adhesions known under the names of Jackson's membrane, Lane's kink, Morris' cobwebs, or Codman drag, must all be considered, both medically as a cause of the stasis, and surgically, if the abdomen is opened.

Intestinal stasis causes infection, or allows the colon bacillus to migrate to other parts of the body and cause it. Whether other pathogenic germs migrate from this cause has not been determined, but the toxins formed by maldigestion, toxalbumins of different types, are potent causes of systemic irritation. Considerable amounts of indican in the urine are usually signals of intestinal putrefaction, and free catharsis should be caused and a modified diet should be inaugurated to ascertain whether the intestinal disturbance is persistent, or can be stopped.

If a chronic apparently causative condition of the intestinal stasis is diagnosed and operation seems advisable, all means of diagnosis should be exhausted before the operation, so that after the abdomen is opened all abnormal conditions may be corrected, if possible. Toward this end the intestinal activity should be determined by roentgenograms after the administration of barium sulphate or a salt of bismuth. Bismuth subcarbonate should be the salt of bismuth used, and never the bismuth subnitrate, as the latter can cause poisoning, while the subcarbonate probably never does, when administered by the mouth.

Another test of intestinal stasis is to administer charcoal and note when it appears in the feces. The limit of its evacuation should be under sixty hours, probably normally a much shorter time than that, but anything longer than sixty hours shows intestinal stasis. Also in these chronic cases of intestinal disturbances test meals should be given and the stomach contents examined.

There may be retained masses of feces in both the rectum and colon, and still the patient have daily movements of the bowels, and even a diarrhea. Such accumulations, if not noted by physical examination, may be inferred from the fact that the patient occasionally passes a fecal mass of hard consistency and very offensive odor.

It is superfluous to state that a tight sphincter should be dilated, that a pendent abdomen and ptosed organs should be supported with a belt, or that it is necessary for a patient to go to stool at an appointed hour each day, the best hour being after breakfast. The morning food and drink are apparently the most stimulant to intestinal activity.

The diet in intestinal stasis is important. Many persons undereat; many eat foods which leave but little residue; many drink insufficient amounts of water, although large amounts of water do not necessarily increase the movements of the bowels. In other words, a constipated patient may be loaded with water and pass enormous amounts of urine, or become edematous, if his circulation is insufficient, and still have no increased bowel activity.

While many fruits are laxative and very valuable, in some persons they cause hyperacidity, and are inadvisable. The laxative vegetables need not be named. Fats and oils, provided they cause no indigestion, form soaps which are laxative. Therefore, salads, cream and butter are aids when the bowels are sluggish. Oatmeal is laxative if properly taken, which means in a gruel and thoroughly cooked.

Substances that retain water are valuable, such as gelatin, tapioca, etc. Bananas, if well tolerated, are of value because they absorb and retain water. Half an ounce of agar-agar, morning and night, is often efficacious.

After once or twice thoroughly cleaning out the bowels it is not advisable, in ordinary constipation without any other disease, to give repeated doses of saline cathartics in amount sufficient to cause purging. A small dose of a saline once a day, however, may be good treatment.

Massage, exercise and vibrations to the abdomen are all valuable additions to the physical treatment of constipation.

A colon wash once a week with 3 or 4 quarts of physiologic saline solution at a temperature of about 110 F., with the reservoir held at a height of 2½ to 3 feet, is many times a very valuable addition to other treatment. An injection of a few ounces of olive oil into the rectum or a half pint or more into the colon, allowing it to remain there for some hours, is at times almost curative in sluggishness of the bowels. This is best given at night, perhaps once or twice a week.

If the stools are dry, oils are indicated, and pure white, tasteless and odorless liquid petrolatum is often of value. This oil should never be given directly after meals as it delays absorption and digestion. It should be given on an empty stomach, and the ordinary dose would be a tablespoonful at night, or three times a day, between meals, in cold water, or in lemonade or orangeade. It has not been proved that liquid petrolatum inhibits bacterial growth.

The value of the ordinary vegetable laxatives, with or without strychnin, and with or without atropin or belladonna, is recognized by all. When the intestinal walls are relaxed and inefficient, a smooth muscle stimulant as physostigmin sulphate, in dose of 0.001 gm. (1/60 grain), or ergot may be of value.

If there is putrefactive fermentation, lactic acid bacilli may be given, best in the form of the Bulgarian bacillus. The restriction of proteins and a preponderance of carbohydrate in the diet makes this measure more satisfactory. After three or four days, or at most a week, the intestinal flora theoretically should have been changed in its character. The treatment should then be stopped, to be repeated in two or three weeks, if needed.

Phenolphthalein, if used too frequently and too long, can cause intestinal irritation.

STATE BOARD STATISTICS FOR 1914

THE ANNUAL PRESENTATION BY THE COUNCIL ON MEDICAL EDUCATION OF RESULTS OF STATE BOARD EXAMINATIONS

On pages 1402 to 1411 are three tables, A, B and C, giving in detail the results of the various state medical license examinations held during 1914. These statistics are complete, since full reports were obtained from all state licensing boards.

Tables A and B have been arranged so that, read from left to right, they give the results by colleges, showing the number of graduates appearing for examination in each state, whether they passed or failed, the total number examined during the year, the number who passed, the number who failed, the percentage of failures and the number of states in which graduates of each school appeared for examination. Read from above downward, they give the results by states, showing the number registered and rejected from each college, the total number examined, the total number registered, the total number rejected and the percentage of rejections. The fact that the majority of graduates take the license examination in the state in which the college is located is shown by the dark diagonal zone made by the grouping of figures, passing from the upper left to the lower right corner of each table. This shows also *that the states in which low-grade medical schools are permitted to exist are themselves the recipients of the greater portion of the ill-trained output of such schools.* These tables are worthy of careful study, for important deductions are possible. The marginal numbers will enable the reader more readily to follow the lines for any colleges in which he is interested.

Caution in Forming Conclusions

In making comparisons on the basis of these statistics, several factors should be kept in mind. The number examined is important since, if all other conditions are equal, the larger the number of graduates examined the more accurate is the finding. But other conditions are seldom equal. The number of states in which a school's graduates have been examined is important. The larger this number the more accurate will be the conclusions. Again, the character of the board making the examination and the methods employed are important factors to be considered, since some boards hold very careful examination and include practical laboratory and clinical tests, or they may mark the papers more severely, while others, especially partisan boards, may be very lenient. In this connection it should be stated that although conditions are undergoing a steady improvement, it is still true that the character of the license examination as usually conducted is such that graduates of colleges conducted largely by quiz-class methods may easily be successful in passing them. It is particularly important in forming conclusions based on these statistics to note for each college *the states in which its graduates are not admitted to examinations*—information set forth with these statistics, in Table D.

Graduates of All Years Examined in 1914

Table A shows the results for all candidates who took examinations in 1914 regardless of the years in which they graduated. This shows that altogether 5,570 candidates were examined last year, as compared with 6,435 in 1913, 6,879 in 1912, 6,960 in 1911 and 7,004 in 1910. There has been a steady decrease each year since 1906 when 8,035 physicians were examined. The decrease each year has been due largely to (1) the wider extension of reciprocity and (2) the general diminution in the number of medical colleges, students and graduates. Of those examined this year, 21.6 per cent. failed, as compared with 18.6 per cent. in 1913; 20.5 per cent. in 1912; 19.9 per cent. in 1911 and 18.4 per cent. in 1910.

There were 96 medical colleges in the United States granting degrees in 1914 which had graduates examined, as compared with 99 in 1913 and 110 in 1912. This is a decrease of 57 since 1905 when graduates of 153 medical colleges in the United States were examined. Foreign graduates were examined in twenty-eight states, the total number being 117, and of this number 49, or 41.0 per cent., failed. The largest numbers of foreigners examined in any state were 24 in Texas where 22 passed, and 23 in New York where only 3 passed. Graduates of Canadian schools were examined in eighteen states, more appearing, naturally, in the border-line states. The figures for the Canadian colleges are given separately in order to show the number of candidates coming from each as well as to show the successes of their graduates at the examinations. Altogether 57 candidates from Canadian colleges were examined, of whom 4, or 7 per cent., failed. Of all Canadian colleges, the University of Toronto had the largest number examined. The highest percentages of failures were for Laval University, 66.7 and Queen's University, 20.0.

Undergraduates Examined During 1914

Line 107 of Table A shows the number of non-graduates examined in seven states during 1914. Altogether 293 non-graduates were examined, of which number 180, or 61.4 per cent. failed, as compared with 37.8 per cent. in 1913, 35 per cent. in 1912, and 38.5 per cent. in 1911. Such candidates were examined during 1914 in Colorado, Massachusetts, Oregon and Tennessee. Of such candidates none was licensed in Colorado, 13 in Oregon, 24 in Massachusetts and 76 in Tennessee. In Tennessee in the last five years 1,296 candidates were registered by examination, and of these 591, or 45.6 per cent., were non-graduates. Meanwhile, Tennessee has just secured from its legislature a new practice act which shuts that door which has for so long been open to non-graduates. Oregon, likewise, has barred the way to these incompetents by an amendment. This leaves only Colorado and Massachusetts which will examine non-graduates. In the former, however, only two non-graduates have been licensed in nine years, while in the same time 121 were licensed in Massachusetts. Massachusetts, therefore, is now the only state which has a wide open door for non-graduates—those whose medical training is known to be incomplete—to secure the legal right to practice medicine.

Recent Graduates Examined During 1914

Table B gives the results for graduates of 1910 to 1914 inclusive, who were examined during 1914. This table is particularly important since it deals with recent graduates and is, therefore, the fairest basis for comparison between colleges. Such comparisons are worthless, however, unless reference is also made to Table D, showing in what states graduates of certain colleges are reported not eligible for examination. Of all candidates examined in 1914, 4,549, or 81.7 per cent., were recent graduates, and of this number 17.6 per cent. failed, as compared with 21.6 per cent. for all candidates. The figures regarding graduates of several medical schools which have ceased to exist either through merger or otherwise, have been included in the line for miscellaneous colleges.

Old Practitioners Examined During 1914

Table C is so arranged as to show in comparison the result of all years (first column), for recent graduates (second column), the graduates of 1909 and previous years (third column), and the graduates of 1914 (fourth column). Of the graduates of 1909 and previous years—of "old practitioners"—728 were examined, and of this number 219, or 30.0 per cent. failed, as compared with 17.6 per cent. of failures for recent graduates. This high percentage of failures is probably due chiefly to the long time these candi-

CONTINUED ON PAGE 1414

Marginal Number	NAME OF COLLEGE	1 Alabama P	1 Alabama F	2 Alaska P	2 Alaska F	3 Arizona P	3 Arizona F	4 Arkansas P	4 Arkansas F	5 California P	5 California F	6 Colorado P	6 Colorado F	7 Connecticut P	7 Connecticut F	8 Delaware P	8 Delaware F	9 District of Columbia P	9 District of Columbia F	10 Florida P	10 Florida F	11 Georgia P	11 Georgia F	12 Idaho P	12 Idaho F	13 Illinois P	13 Illinois F	14 Indiana P	14 Indiana F	15 Iowa P	15 Iowa F	16 Kansas P	16 Kansas F	17 Kentucky P	17 Kentucky F	18 Louisiana P	18 Louisiana F	19 Maine P	19 Maine F	20 Maryland P	20 Maryland F	21 Massachusetts P	21 Massachusetts F	22 Michigan P	22 Michigan F	Marginal Number
	ALABAMA																																													
1	Birmingham Medical College	26	23					1	0											0	1	5	2													1	0									1
2	University of Alabama, School of Medicine	30	2																	3	0	1	0													1	0									2
	ARKANSAS																																												
3	University of Arkansas, Medical Dept.							30	2																											2	0									3
	CALIFORNIA																																												
4	California Eclectic Medical College.—E.					0	1			6	5													1	0																					4
5	College of Medical Evangelists									3	2																																			5
6	College of Phys. and Surgs., Los Angeles					1	0			33	4																																			6
7	College of Phys. and Surgs., San Francisco									1	5																																			7
8	Hahnemann Medical College of the Pacific.—H.									5	2																																			8
9	Leland Stanford Junior Univ., School of Med.									10	1																																			9
10	Oakland College of Medicine and Surgery									3	1																																			10
11	University of California, Medical School									15	0																																			11
	COLORADO																																													
12	University of Colorado, School of Medicine					2	0	2	0	1	0	21	0							1	0			3	0			1	0																	12
	CONNECTICUT																																													
13	Yale Medical School													4	0					2	0											1	0							1	0			13
	DISTRICT OF COLUMBIA																																													
14	Georgetown University School of Medicine									1	0					1	0	8	0																					3	0			14
15	George Washington University Medical School					1	0					1	0					10	0	1	0			1	0															1	0			15
16	Howard University School of Medicine	2	0			1	0	1	0							1	0	9	5													1	0							1	1			16
	GEORGIA																																													
17	Atlanta Medical College	6	5																	28	2	113	1																					17
18	Georgia College of Eclectic Med. and Surg.—E.							2	0													4	8																					18
19	Southern College of Medicine and Surgery																			1	4	0	2																					19
20	University of Georgia, Medical Dept.	0	1																	6	0	22	0																					20
	ILLINOIS																																													
21	Bennett Medical College	1	3					0	1	1	0	1	0							1	0	1	1			86	12	1	0	6	0			0	1					0	1	0	1			21
22	Chicago College of Medicine and Surgery	5	1			1	1			1	0									2	0	2	0			114	39	7	1	8	0	1	0	1	0	1	0					4	2	1	0	22
23	Hahnemann Medical College and Hospital.—H.									1	0							1	0							17	8	2	1	2	0											1	0			23
24	Jenner Medical College									0	1													1	0	7	4																			24
25	Northwestern University Medical School					2	0	1	0			1	0							1	0			1	0	46	6	1	0	5	0	1	0											25
26	Rush Medical College			1	0	2	1			1	0	1	0							3	0			1	0	65	4			10	0													26
27	University of Illinois College of Medicine									0	1							2	0					1	0	91	8	1	0	3	0											3	0			27
	INDIANA																																												
28	Indiana University School of Medicine																											22	0																	28
	IOWA																																												
29	State University of Iowa College of Medicine											1	0							1	1									13	0	1	0									0	1			29
30	State Univ. of Iowa Coll. of Homeo. Med.—H.	1	0																																							2	0			30
	KANSAS																																												
31	University of Kansas School of Medicine																															10	0							1	0			31
	KENTUCKY																																												
32	University of Louisville, Medical Dept.	1	0					2	2					1	0					1	1	2	0	1	0	1	0	2	0					40	2	1	1			0	1	0	2	2	0	32
	LOUISIANA																																												
33	Tulane University of Louisiana, School of Med.	10	1					1	0											3	0															59	1									33
	MAINE																																												
34	Medical School of Maine																			1	0																	18	2			7	0			34
	MARYLAND																																												
35	College of Phys. and Surgs., Baltimore													3	1					2	0													1	0			1	0	14	3	4	1			35
36	Johns Hopkins University, Medical Dept.	2	0							2	0			2	0			1	0	1	0	1	0			4	0							1	0					29	0	2	0			36
37	University of Maryland School of Medicine	1	0			2	0							3	0			1	0	3	0	2	0	1	0													2	0	43	5	3	0			37
	MASSACHUSETTS																																												
38	Boston University School of Medicine.—H.							2	0					1	0																							1	1			17	0			38
39	College of Physicians and Surgeons, Boston													0	1			0	1	0	2																	5	4	0	1	5	13			39
40	Medical School of Harvard University	1	0							5	0	1	0	1	0	1	0			1	0					2	0					1	0					7	0			28	1			40
41	Tufts College Medical School						0			1	0			3	0					1	0																	5	0			62	5			41
	MICHIGAN																																												
42	Detroit College of Medicine and Surgery																							1	0	0	1																	54	0	42
43	University of Michigan, Dept. of Med. and Surg.	2	0							1	0			2	0					1	0			1	0					1	0											1	0	41	0	43
44	University of Michigan, Homeo. Med. College.—H.																	0	1							1	0													1	0			21	1	44
	MINNESOTA																																												
45	University of Minnesota, Medical School																																												45
	MISSOURI																																												
46	American Medical College							2	0																	2	3			1	0															46
47	Eclectic Medical University.—E.							11	0																							0	2											47
48	Ensworth Medical College																							0	1					2	0	1	0											48
49	Kansas City Hahnemann Medical College.—H.							8	0									1	0													8	0											49
50	St. Louis College of Physicians and Surgeons					0	1			0	1									1	0					0	1			1	1													50
51	St. Louis University School of Medicine																									2	1	2	0	3	0													51
52	Washington University, Medical School					3	0																			1	0			2	0													52
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H.—Homeopathic; E.—Eclectic.

Marginal Number	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Totals	Examined—Passed	Examined—Failed	Percentage of Failures	No. States Ex. in	Marginal Number
	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming						
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
1	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	60	34	26	43.3	6	1
2	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	41	38	3	7.3	7	2
3	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 3	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	44	38	6	13.6	5	3
4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	15	8	7	46.7	5	4
5	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	3	2	40.0	1	5
6	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	41	37	4	9.8	5	6
7	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	11	4	7	63.6	4	7
8	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8	6	2	25.0	2	8
9	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11	10	1	9.1	1	9
10	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4	3	1	25.0	1	10
11	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	17	16	1	5.9	2	11
12	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3 0	.. ..	.. ..	2 0	39	39	0	0.0	11	12
13	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	24	23	1	4.2	7	13
14	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	3 2	.. ..	3 1	.. ..	.. ..	1 0	1 3	.. ..	5 0	1 0	.. ..	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	34	31	3	8.8	14	14
15	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	2 1	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	24	23	1	4.2	12	15
16	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 1	.. ..	0 2	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	1 0	.. ..	.. ..	30	21	9	30.0	13	16
17	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	167	155	12	7.2	5	17
18	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	15	6	9	60.0	3	18
19	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13	3	10	76.9	4	19
20	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	31	30	1	3.2	4	20
21	.. ..	.. ..	1 0	1 0	3 1	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	1 0	2 0	.. ..	.. ..	3 1	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	6 0	2 0	.. ..	142	119	23	15.6	23	21
22	1 0	0 1	7 1	4 1	1 0	.. ..	.. ..	.. ..	.. ..	0 2	0 2	2 0	0 1	2 0	3 2	2 0	.. ..	.. ..	1 1	1 0	6 1	.. ..	.. ..	.. ..	2 0	2 0	3 1	.. ..	242	185	57	23.6	31	22
23	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	34	25	9	26.5	7	23
24	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13	8	5	38.4	3	24
25	5 0	.. ..	4 0	5 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	4 0	1 0	4 0	.. ..	.. ..	.. ..	1 0	.. ..	1 0	.. ..	.. ..	.. ..	3 1	.. ..	2 0	.. ..	98	91	7	7.1	21	25
26	6 0	.. ..	6 0	8 1	1 0	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	1 0	1 0	1 0	2 1	.. ..	.. ..	.. ..	4 0	1 0	1 0	1 0	.. ..	.. ..	6 0	.. ..	5 0	.. ..	137	129	8	5.8	23	26
27	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	2 0	1 0	.. ..	1 0	.. ..	.. ..	.. ..	1 0	1 0	.. ..	.. ..	2 0	.. ..	10 0	.. ..	131	122	9	6.9	17	27
28	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	22	22	0	0.0	1	28
29	.. ..	.. ..	1 0	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	22	19	3	13.6	8	29
30	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6	6	0	0.0	5	30
31	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13	12	1	7.7	3	31
32	.. ..	1 0	1 0	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	3 5	.. ..	1 1	.. ..	2 0	1 0	.. ..	.. ..	0 1	1 0	.. ..	1 1	.. ..	83	64	19	22.9	24	32
33	.. ..	9 0	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	1 0	.. ..	.. ..	1 0	1 1	.. ..	.. ..	1 0	.. ..	.. ..	11 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	103	99	4	3.9	12	33
34	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	32	30	2	6.2	4	34
35	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	0 1	1 2	.. ..	4 1	0 1	.. ..	1 0	2 0	.. ..	1 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4 0	1 0	20 1	1 0	.. ..	73	62	11	15.1	19	35
36	.. ..	.. ..	2 0	1 0	.. ..	.. ..	.. ..	1 0	.. ..	12 3	.. ..	.. ..	2 0	.. ..	2 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3 0	2 1	.. ..	3 0	.. ..	78	74	4	5.1	20	36
37	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	1 0	.. ..	3 1	11 1	.. ..	1 0	.. ..	.. ..	2 0	1 0	9 0	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	1 0	4 0	.. ..	.. ..	104	96	8	7.7	21	37
38	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	2 0	.. ..	.. ..	1 2	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	32	28	4	12.5	10	38
39	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	0 1	0 2	.. ..	.. ..	.. ..	.. ..	2 1	4 0	1 0	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	3 0	.. ..	2 0	.. ..	83	78	5	6.0	19	39
40	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	5 1	.. ..	.. ..	7 2	.. ..	.. ..	5 0	.. ..	.. ..	0 1	5 1	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	1 0	.. ..	.. ..	.. ..	105	92	13	12.4	13	41
41	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	8 1	.. ..	.. ..	3 5	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..						
42	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	4 0	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	59	58	1	1.7	6	42
43	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	59	59	0	0.0	12	43
44	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	28	24	4	14.3	6	44
45	29 0	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	34	34	0	0.0	4	45
46	.. ..	.. ..	27 7	.. ..	1 0	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	0 1	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	49	37	12	24.5	9	46
47	.. ..	.. ..	.. ..	.. ..	2 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	18	13	5	27.8	3	47
48	.. ..	.. ..	9 2	.. ..	2 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	19	15	4	21.1	7	48
49	.. ..	.. ..	4 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	21	21	0	0.0	4	49
50	.. ..	.. ..	19 15	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	2 0	0 2	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	2 1	.. ..	4 0	.. ..	.. ..	1 0	44	22	22	50.0	8	50
51	.. ..	.. ..	42 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	65	61	4	6.2	12	51
52	.. ..	.. ..	17 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	27	27	0	0.0	7	52
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number	NAME OF COLLEGE	1 Alabama P	F	2 Alaska P	F	3 Arizona P	F	4 Arkansas P	F	5 California P	F	6 Colorado P	F	7 Connecticut P	F	8 Delaware P	F	9 District of Columbia P	F	10 Florida P	F	11 Georgia P	F	12 Idaho P	F	13 Illinois P	F	14 Indiana P	F	15 Iowa P	F	16 Kansas P	F	17 Kentucky P	F	18 Louisiana P	F	19 Maine P	F	20 Maryland P	F	21 Massachusetts P	F	22 Michigan P	F	Marginal Number
	NEBRASKA																																													
53	John A. Creighton Medical College					1	0							1	0											1	0			4	0									1	0			53
54	Cotner University Medical College.—E.																			0	1																							54
55	University of Nebraska, College of Medicine																									1	0																	55
	NEW HAMPSHIRE																																													
56	Dartmouth Medical School																																							4	0			56
	NEW YORK																																													
57	Albany Medical College			1	0									1	0									1	0															5	1			57
58	Columbia University, Coll. of Phys. and Surgs.	1	0							2	0			3	0			1	0																	2	0	4	0	4	0			58
59	Cornell University, Medical College									1	0			1	0	1	0																											59
60	Fordham University, School of Medicine													0	1											1	0													1	0			60
61	Long Island College Hospital							1	0																													1	0	1	0			61
62	New York Homeo. Med. Coll. and Flower Hosp.—H.									1	0			1	0	3	0					1	0															1	0					62
63	New York Med. Coll. and Hosp. for Women.—H.													1	0																													63
64	Syracuse University, College of Medicine													1	0			1	0															1	0							2	0	64
65	University and Bellevue Hospital Med. Coll.									1	0															1	0			1	0							0	1			2	1	65
66	University of Buffalo, Medical Dept.																																												66
	NORTH CAROLINA																																												
67	Leonard Medical School																	0	2	1	1	2	0																					67
68	North Carolina Medical College																					1	0																	1	0			68
	OHIO																																													
69	Cleveland-Pulte Medical College.—H.																																													69
70	Eclectic Medical College.—E.							5	0	0	1							1	0									1	0					1	0									70
71	Medical College of University of Cincinnati																									1	0	1	0					1	0									71
72	Ohio State University, College of Medicine											1	0																															72
73	Western Reserve University, School of Medicine																							1	0	1	0			2	0													73
	OKLAHOMA																																													
74	University of Oklahoma, School of Medicine							1	0																							2	0											74
	OREGON																																													
75	University of Oregon, Dept. of Medicine									1	0													1	0																			75
	PENNSYLVANIA																																													
76	Hahnemann Medical College and Hospital.—H.									1	0			1	0	2	0																							3	0			76
77	Jefferson Medical College	1	0	1	0	0	1	1	0	1	0			1	0	2	0	2	0	2	0					1	0			1	0	1	0	1	0			1	0	1	0	5	0	1	0	77
78	Medico-Chirurgical College of Philadelphia	0	1			1	1			1	1					4	0																					1	0	2	1			78
79	Temple University, Dept. of Medicine																	2	0																			0	1	1	0			79
80	University of Pennsylvania, School of Medicine	1	0			1	0							1	0	1	0	1	0	2	0					2	0			2	0	1	0					1	0	2	0	1	0			80
81	University of Pittsburgh, School of Medicine																																												81
82	Woman's Medical College of Pennsylvania													1	0					1	0					1	0			1	0									1	0			82
	SOUTH CAROLINA																																												
83	Medical College of the State of South Carolina																			2	0	2	0																					83
	TENNESSEE																																												
84	Lincoln Memorial University, Medical Dept.																			0	1													3	0									84
85	Meharry Medical College	5	5					5	5	0	2							0	1	5	3	7	4			7	6					1	2	3	0	0	2			0	1					85
86	University of Tennessee, College of Medicine	1	3			0	1	15	2											1	2	0	2			1	0					2	0	2	0	4	7									86
87	University of West Tennessee, College of Med.																					1	0															0	1			0	1			87
88	Vanderbilt University, Medical Dept.	3	1			1	0	1	0											2	1	4	0							1	0			3	1	1	0							1	0	88
	TEXAS																																												
89	Baylor University, College of Medicine																																			1	0									89
90	Southern Methodist University, Medical Dept.																																												90
91	Texas Christian University, School of Medicine																																													91
92	University of Texas, Dept. of Medicine									1	0																																	92
	VERMONT																																												
93	University of Vermont, College of Medicine													4	0			1	0	1	0																	2	0			8	1			93
	VIRGINIA																																												
94	Medical College of Virginia																			1	0																			0	1					94
95	University of Virginia, Dept. of Medicine																	1	0																									95
	WISCONSIN																																												
96	Marquette University, School of Medicine																			1	0					3	0																	96
	CANADIAN																																													
97	Dalhousie University, Faculty of Medicine																																										1	0			97
98	Laval University, Medical Faculty																																													98
99	McGill University, Faculty of Medicine			1	0					2	0											1	0															1	0					99
100	Montreal School of Medicine and Surgery																																									1	0			100
101	Queen's University, Faculty of Medicine									0	1																																	101
102	University of Manitoba, Manitoba Med. Coll.																																												102
103	University of Toronto, Faculty of Medicine									1	0																													1	0	2	0	6	0	103
104	Western University, Medical Faculty																																											1	0	104
105	Foreign Colleges					1	0			3	4	2	0	2	1					0	3			0	1	6	2	1	0	1	0	1	0					1	1	0	1	8	5	3	0	105
106	Miscellaneous Medical Colleges	15	14			5	9	5	4	6	13	1	0	7	4	2	0	4	2	22	14	8	1	3	0	17	15	6	0	6	0	4	0	1	3	5	13	3	1	3	11	13	8	2	1	106
107	Undergraduates											0	1																													24	53			107
	Totals by States	175		4		42		113		158		32		54		18		59		143		200		21		594		50		78		41		66		100		65		132		323		140		
	Totals—Examined—Passed	115		4		26		97		113		31		46		18		47		106		179		19		484		48		77		37		59		76		54		105		226		138		
	Totals—Examined—Failed	60		0		16		16		45		1		8		0		12		37		21		2		110		2		1		4		7		24		11		27		97		2		
	Percentage of Failures	34.3		0.0		38.1		14.2		28.5		3.1		14.8		0.0		20.3		25.9		10.5		9.5		18.5		4.0		1.3		9.8		10.6		24.0		16.9		20.5		30.0		1.4		
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H.—Homeopathic; E.—Eclectic.

Marginal Number	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						Marginal Number
	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Totals	Examined—Passed	Examined—Failed	Percentage of Failures	No. States Ex. in	
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
53				3 2	21 0																							1 0	45	43	2	4.4	8	53
54					6 3																								9	6	3	33.3	1	54
55					12 0																								13	13	0	0.0	2	55
56							8 0			0 2							1 0												15	15	0	0.0	4	56
57								1 0		39 20																			69	48	21	30.4	6	57
58		1 0	1 0		1 0		1 0			54 5			1 0	2 0	4 0		5 0			1 0	1 0	1 0			1 0				96	91	5	5.2	21	58
59					1 0					16 0						1 0													21	21	0	0.0	6	59
60								2 1		24 6						1 0													37	29	8	21.6	6	60
61							1 0	1 0		95 14																			114	100	14	12.3	6	61
62								5 1		16 18		1 0				2 0													50	31	19	38.0	9	62
63								1 0		7 3																			12	9	3	25.0	3	63
64										18 5			1 0		1 0														30	25	5	16.7	7	64
65	1 0			1 0			1 0	8 0		63 10			1 0		1 0	1 0				1 0					1 0				96	84	12	12.5	15	65
66										56 7																			63	56	7	11.1	1	66
67											4 9			0 1				2 2		0 2						1 1			28	10	18	64.3	8	67
68											18 8							9 23											40	29	11	27.5	4	68
69										0 1			11 0																12	11	1	8.3	2	69
70						0 1				0 2			16 7	1 0						1 1					1 0				39	27	12	30.8	11	70
71				0 1						0 1			12 0															17	15	2	11.8	6	71
72													51 10			1 0										3 0			66	56	10	15.2	4	72
73										1 0			25 0	1 0															31	31	0	0.0	6	73
74			2 0											11 0															16	16	0	0.0	4	74
75															12 3										11 0				28	25	3	10.7	4	75
76								1 0		1 2						8 1								1 0					21	18	3	14.3	8	76
77		2 0	2 0	2 0			2 0	10 2		11 4	16 6		2 0	1 0	3 0	18 0	1 0	1 0		1 0	1 0	2 0	1 0		3 0		1 0		110	103	7	6.4	34	77
78				1 2						1 4	1 0		1 0		1 0	20 0	1 1												46	35	11	22.9	15	78
79																1 0													5	4	1	20.0	4	79
80	1 0		3 0	1 0				1 0		7 1	10 0		3 0	1 1		10 0		2 0			1 0	1 0		2 0	4 0		2 0		67	65	2	3.0	27	80
81																1 0									1 0				2	2	0	0.0	2	81
82			2 0					2 0		4 2					4 1	1 1										1 0			23	19	4	17.4	11	82
83											1 1							20 7							1 0				34	26	8	23.5	7	83
84																				1 7									12	4	8	66.7	5	84
85		0 3	5 1								0 3			1 3			0 1	4 5		17 26	15 1	0 1		0 3		0 1			153	75	78	51.0	22	85
86		19 5		1 0					1 1		1 0			2 0						12 16	6 2				1 1				111	69	42	37.8	17	86
87			1 2								0 3			0 1				4 8		2 23	7 0	1 0							47	8	39	83.0	8	87
88		2 1	2 0											0 1				1 0		23 0					1 0				59	54	5	8.5	17	88
89															1 0						18 1								21	20	1	4.8	3	89
90																					18 0								18	18	0	0.0	1	90
91																					10 0								10	10	0	0.0	1	91
92			6 0							1 0					1 0						32 0								31	31	0	0.0	5	92
93							3 1			6 1			1 0				2 0				1 0		23 0	2 0					57	54	3	5.3	12	93
94										2 0	12 2													70 6		6 0			100	91	9	8.1	6	94
95		4 0						1 0		1 3									1 0	1 0				3 0					15	12	3	20.0	7	95
96	0 1			1 3						0 2		3 0													1 0		45 1		61	54	7	11.5	8	96
97																													1	1	0	0.0	1	97
98										0 1		1 0					0 1												3	1	2	66.7	3	98
99				1 0						2 0					1 0				1 0					2 0				12	12	0	0.0	9	99
100																	1 0												2	2	0	0.0	2	100
101										6 1		1 0	1 0																10	8	2	20.0	4	101
102																									1 0				1	1	0	0.0	1	102
103				5 0						5 0						1 0	1 0								1 0				23	23	0	0.0	9	103
104				1 0									1 0																5	5	0	0.0	5	104
105			1 0			2 0	0 2	0 3	1 0	3 20		1 0			2 0	2 3	1 0			1 0	22 2				2 1		1 0		117	68	49	41.0	28	105
106	2 2	8 7	25 5	9 12	2 0	2 1		0 1	4 0	7 9	3 4	1 0	4 0	6 2	11 10	14 10			3 4	8 1	6 17	6 3	4 1		9 0	20 1	6 1	3 1	506	301	205	40.5	45	106
107															13 19						76 107								292	113	180	61.4	5	107
	50	68	228	83	72	10	42	54	10	670	118	16	164	60	118	123	32	105	29	354	163	16	28	108	97	55	85	4	3570					
	47	51	195	58	66	7	36	41	8	501	81	15	146	48	76	101	27	68	25	148	152	12	28	98	92	51	81	4	4370					
	3	17	33	25	6	3	6	13	2	169	37	1	18	12	42	23	5	37	4	205	11	4	0	10	5	4	4	0			1200			
	6.0	25.0	14.5	30.1	8.3	30.0	14.3	24.1	20.0	25.2	31.4	6.3	11.0	20.0	35.6	17.9	15.6	35.2	13.8	57.9	6.5	18.7	0.0	9.3	5.2	7.3	4.7	0.0				21.6		
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number.	NAME OF COLLEGE	1 Alabama		2 Alaska		3 Arizona		4 Arkansas		5 California		6 Colorado		7 Connecticut		8 Delaware		9 District of Columbia		10 Florida		11 Georgia		12 Idaho		13 Illinois		14 Indiana		15 Iowa		16 Kansas		17 Kentucky		18 Louisiana		19 Maine		20 Maryland		21 Massachusetts		22 Michigan		Marginal Number
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	
	ALABAMA																																										
1	Birmingham Medical College	26	23																	0	1	5	2													1	0							1
2	University of Alabama, School of Medicine	28	1																			1	0													1	0							2
	ARKANSAS																																										
3	University of Arkansas, Medical Dept.							28	2																											2	0							3
	CALIFORNIA																																										
4	California Eclectic Medical College.—E.					0	1			6	5													1	0																			4
5	College of Medical Evangelists									3	2																																	5
6	College of Physicians and Surgeons, Los Angeles					1	0			33	4																																	6
7	College of Phys. and Surgs., San Francisco									1	3																																	7
8	Hahnemann Medical College of the Pacific.—H.									5	2																																	8
9	Leland Stanford Junior Univ., School of Med.									10	1																																	9
10	Oakland College of Medicine and Surgery									3	1																																	10
11	University of California, Medical School									15	0																																	11
	COLORADO																																										
12	University of Colorado, School of Medicine					2	0	1	0	1	0	21	0							1	0			3	0			1	0													12
	CONNECTICUT																																										
13	Yale Medical School													4	0																			1	0							13
	DISTRICT OF COLUMBIA																																										
14	Georgetown University School of Medicine									1	0					1	0	8	0																			1	0		3	0		14
15	George Washington University Medical School					1	0											10	0	1	0			1	0													1	0					15
16	Howard University School of Medicine	1	0					1	0							1	0	8	4													1	0						1	1				16
	GEORGIA																																										
17	Atlanta Medical College	6	5																	28	1	113	1																			17
18	Georgia College of Eclectic Med. and Surg.—E.							2	0													4	8																			18
19	Southern College of Medicine and Surgery																			1	4	0	2																			19
20	University of Georgia, Medical Dept.	0	1																	6	0	21	0																			20
	ILLINOIS																																										
21	Bennett Medical College	1	3					0	1	1	0	1	0							1	0	1	1			86	12	1	0	5	0			0	1					0	1	0	1	21
22	Chicago College of Medicine and Surgery	5	1			1	1			1	0									2	0	2	0			113	38	7	1	8	0	1	0	1	0	1	0			4	2	1	0	22
23	Hahnemann Medical College and Hospital.—H.																	1	0							16	8	2	1	2	0									1	0			23
24	Jenner Medical College																									7	4																	24
25	Northwestern University Medical School							1	0			1	0													45	6	1	0	5	0	1	0											25
26	Rush Medical College			1	0	1	0			1	0	1	0							1	0					64	4			9	0													26
27	University of Illinois College of Medicine									0	1							2	0					1	0	91	8	1	0	3	0											3	0	27
	INDIANA																																										
28	Indiana University School of Medicine																											22	0															28
	IOWA																																										
29	State University of Iowa College of Medicine											1	0																	13	0									0	1			29
30	State Univ. of Iowa Coll. of Homeo. Med.—H.																																							2	0			30
	KANSAS																																										
31	University of Kansas School of Medicine																															10	0							1	0			31
	KENTUCKY																																										
32	University of Louisville, Medical Dept.							0	1											1	1	1	0	1	0			2	0					40	2	1	1			0	1	0	2	2	0	32
	LOUISIANA																																										
33	Tulane University of Louisiana, School of Med.	9	1					1	0											2	0															59	0							33
	MAINE																																										
34	Medical School of Maine																																					17	2			7	0			34
	MARYLAND																																										
35	College of Physicians and Surgeons, Baltimore													3	1					2	0													1	0			1	0	14	3	4	1			35
36	Johns Hopkins University, Medical Dept.	2	0							2	0			2	0			1	0	1	0	1	0			3	0							1	0					29	0	2	0			36
37	University of Maryland School of Medicine	1	0			2	0							3	0			1	0	3	0	2	0															2	0	43	5	3	0			37
	MASSACHUSETTS																																										
38	Boston University School of Medicine.—H.													1	0																							1	1			17	0			38
39	College of Physicians and Surgeons, Boston																	0	1	0	2																	4	3	0	1	4	11			39
40	Medical School of Harvard University	1	0							5	0	1	0			1	0			1	0					2	0											4	0			27	1			40
41	Tufts College Medical School													2	0																							5	0			60	5			41
	MICHIGAN																																										
42	Detroit College of Medicine and Surgery																									0	1																	54	0	42
43	University of Michigan, Dept. of Med. and Surg.	2	0											2	0															1	0											41	0	43
44	University of Michigan, Homeo. Med. College.—H.																	0	1																					1	0			21	1	44
	MINNESOTA																																										
45	University of Minnesota, Medical School																																										45
	MISSOURI																																										
46	American Medical College							1	0																	2	3			1	0													46
47	Eclectic Medical University.—E.							10	0																							0	2											47
48	Ensworth Medical College																													2	0	1	0											48
49	Kansas City Hahnemann Medical College.—H.							2	0									1	0													8	0											49
50	St. Louis College of Physicians and Surgeons									0	1																			1	0													50
51	St. Louis University School of Medicine																									2	1	2	0	3	0													51
52	Washington University, Medical School					1	0																			1	0			2	0													52
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H.—Homeopathic; E.—Eclectic.

Marginal Number	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Totals	Examined—Passed	Examined—Failed	Percentage of Failures	No. States Ex. in	Marginal Number
	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming						
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
1		1 0													1 0														59	33	26	44.1	5	1
2		2 0																											34	33	1	2.9	5	2
3			1 0											5 3						0 1									42	36	6	14.3	5	3
4															0 1										1 0				15	8	7	46.7	5	4
5																													5	3	2	40.0	1	5
6				1 0										1 0	1 0	1 0													41	37	4	9.8	5	6
7						1 0								0 2															7	2	5	71.4	3	7
8														1 0															8	6	2	25.0	2	8
9																													11	10	1	9.1	1	9
10																													4	3	1	25.0	1	10
11																													15	15	0	0.0	1	11
12				1 0																					3 0			2 0	36	36	0	0.0	9	12
13										12 1										1 0			1 0						20	19	1	5.0	6	13
14				1 0				3 1		3 1			1 0	1 0		4 0					1 0								30	28	2	6.7	12	14
15					1 0					1 0				2 0															20	20	0	0.0	10	15
16							1 0	1 0		0 1	1 0							1 0						1 0		1 0			24	18	6	25.0	17	16
17		2 0									0 2							6 2											166	155	11	6.6	6	17
18																		0 1											15	6	9	60.0	3	18
19																		1 4											12	2	10	83.3	3	19
20																		2 0											30	29	1	3.3	4	20
21			1 0	1 0	2 0						1 0			1 0		2 0			3 1	0 1					6 0	1 0			137	115	22	16.1	21	21
22	1 0	0 1	7 1	4 1	1 0					0 2	0 2	2 0	0 1	2 0	2 0	2 0			1 0	1 0	6 1				1 0	2 0	3 1		235	182	53	22.6	31	22
23				1 0																									32	23	9	28.1	6	23
24																													11	7	4	36.3	1	24
25	5 0		4 0	1 0								1 0	4 0		2 0				1 0		1 0				3 0		2 0		84	78	6	7.1	16	25
26	6 0		6 0	5 0						1 1		1 0	1 0		2 0				3 0	1 0		1 0			4 0		5 0		119	114	5	4.2	20	26
27	1 0		1 0									1 0		2 0	1 0		1 0				1 0	1 0			2 0		10 0		131	122	9	6.8	17	27
28																													22	22	0	0.0	1	28
29																													15	14	1	6.7	3	29
30																													2	2	0	0.0	1	30
31																													11	11	0	0.0	2	31
32		1 0										0 1				3 5		1 1		2 0	1 0			0 1	1 0		1 1		75	58	17	22.7	19	32
33		8 0	2 0								1 0			1 0				1 0			3 0								94	93	1	1.1	10	33
34							4 0																						30	28	2	6.7	3	34
35				1 0				1 1		4 1	0 1		1 0				1 0							2 0		19 1	1 0		64	55	9	14.1	15	35
36			2 0	1 0				1 0		9 3			2 0		2 0	1 0								3 0	2 1		2 0		73	69	4	5.5	20	36
37								1 0		1 1	11 1		1 0				1 0	9 0						2 0		4 0			97	90	7	7.2	17	37
38					1 0		2 0			1 1					1 0		1 1							1 0					29	26	3	10.3	9	38
39											0 2							1 0											29	9	20	69.0	7	39
40							3 0			6 1			5 0			0 1	2 0								2 0		1 0		64	61	3	4.7	15	40
41							7 0			3 4						0 1	4 0						1 0		1 0				93	83	10	10.8	9	41
42																									1 0				56	55	1	1.8	3	42
43										1 0					1 0				3 0										51	51	0	0.0	7	43
44								1 0		0 2																			27	23	4	14.8	5	44
45	28 0			1 0								1 0													1 0				31	31	0	0.0	4	45
46			25 7		1 0				1 1					2 0					0 1	1 0									46	34	12	26.1	3	46
47					2 3																								17	12	5	29.4	3	47
48			9 2		2 0																								16	14	2	12.5	4	48
49			3 0																										20	20	0	0.0	4	49
50			16 13																		0 1								32	17	15	46.9	4	50
51			41 0	1 0							1 0			2 0								2 0			4 0			1 0	60	59	1	1.7	10	51
52			14 0	1 0																1 0					1 0				21	21	0	0.0	7	52
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number	NAME OF COLLEGE	1 Alabama		2 Alaska		3 Arizona		4 Arkansas		5 California		6 Colorado		7 Connecticut		8 Delaware		9 District of Columbia		10 Florida		11 Georgia		12 Idaho		13 Illinois		14 Indiana		15 Iowa		16 Kansas		17 Kentucky		18 Louisiana		19 Maine		20 Maryland		21 Massachusetts		22 Michigan		Marginal Number
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	
	NEBRASKA																																										
53	John A. Creighton Medical College													1	0											1	0			4	0									1	0			53
54	Cotner University Medical College.—E.																																									54
55	University of Nebraska, College of Medicine																									1	0																	55
	NEW HAMPSHIRE																																									
56	Dartmouth Medical School																																							2	0			56
	NEW YORK																																									
57	Albany Medical College			1	0																			1	0													4	1			57
58	Columbia University Coll. of Phys. and Surgs.									1	0			1	0			1	0																			3	0			58
59	Cornell University Medical College									1	0			1	0	1	0																									59
60	Fordham University, School of Medicine																									1	0													1	0			60
61	Long Island College Hospital																																					1	0	1	0			61
62	New York Homeo. Med. Coll. and Flower Hosp.—H.									1	0			1	0	3	0					1	0																			62
63	New York Med. Coll. and Hosp. for Women.—H.													1	0																											63
64	Syracuse University, College of Medicine													1	0			1	0													1	0							1	0	64
65	University and Bellevue Hospital Med. Coll.									1	0															1	0			1	0									1	1			65
66	University of Buffalo, Medical Dept.																																										66
	NORTH CAROLINA																																										
67	Leonard Medical School																	0	2	1	1	2	0																			67
68	North Carolina Medical College																																							1	0			68
	OHIO																																									
69	Cleveland-Pulte Medical College.—H.																																									69
70	Eclectic Medical College.—E.							2	0	0	1							1	0									1	0					1	0							70
71	Medical College of the University of Cincinnati																									1	0	1	0					1	0							71
72	Ohio State University, College of Medicine											1	0																													72
73	Western Reserve University, School of Medicine																							1	0	1	0			2	0											73
	OKLAHOMA																																									
74	University of Oklahoma, School of Medicine							1	0																							2	0									74
	OREGON																																									
75	University of Oregon, Dept. of Medicine									1	0													1	0																	75
	PENNSYLVANIA																																									
76	Hahnemann Medical College and Hospital.—H.									1	0			1	0	2	0																					3	0			76
77	Jefferson Medical College	1	0	1	0					1	0			1	0	2	0	1	0	1	0									1	0	1	0	1	0			1	0	4	0			77
78	Medico-Chirurgical College of Philadelphia	0	1			1	1			1	1					4	0																					1	0	2	1			78
79	Temple University, Dept. of Medicine																	2	0																			0	1	1	0			79
80	University of Pennsylvania, School of Medicine	1	0											1	0	1	0	1	0	1	0					1	0			1	0	1	0					1	0	1	0			80
81	University of Pittsburgh, School of Medicine																																									81
82	Woman's Medical College of Pennsylvania													1	0															1	0									1	0			82
	SOUTH CAROLINA																																										
83	Medical College of the State of South Carolina																			2	0	2	0																			83
	TENNESSEE																																										
84	Lincoln Memorial University, Medical Dept.																			0	1													3	0							84
85	Meharry Medical College	5	5					3	4	0	2							0	1	5	3	7	3			6	4					1	2	3	0	0	1			0	1			85
86	University of Tennessee, College of Medicine	1	3					15	2											0	2	0	2									2	0	1	0	4	7							86
87	University of West Tennessee, College of Med.																					1	0															0	1			0	1			87
88	Vanderbilt University, Medical Dept.	3	1					1	0											1	0	4	0							1	0			3	1	1	0					1	0	88
	TEXAS																																										
89	Baylor University, College of Medicine																																			1	0							89
90	Southern Methodist University, Medical Dept.																																										90
91	Texas Christian University, School of Medicine																																									91
92	University of Texas, Dept. of Medicine																																									92
	VERMONT																																										
93	University of Vermont College of Medicine													4	0			1	0																			2	0	5	1			93
	VIRGINIA																																									
94	Medical College of Virginia																			1	0																	0	1			94
95	University of Virginia, Dept. of Medicine																																										95
	WISCONSIN																																										
96	Marquette University, School of Medicine																			1	0					3	0															96
	CANADIAN																																									
97	Dalhousie University, Faculty of Medicine																																							1	0			97
98	Laval University, Medical Faculty																																										98
99	McGill University, Faculty of Medicine									2	0											1	0																			99
100	Montreal School of Medicine and Surgery																																							1	0			100
101	Queen's University, Faculty of Medicine																																									101
102	University of Manitoba, Manitoba Medical Coll.																																										102
103	University of Toronto, Faculty of Medicine																																							1	0	2	0	3	0	103
104	Western University, Medical Faculty																													1	0											1	0	104
105	Foreign Colleges									1	2	2	0	1	1					0	2			0	1	1	2			1	0	1	0					2	2	1	0	105
106	Miscellaneous Medical Colleges	8	13			0	2	0	3	0	3			4	2	2	0	3	2	8	2	5	0	1	0	8	6			3	0	1	0	0	1	4	7	3	1	3	11	7	6	1	0	106
	Totals by States	159		3		15		88		128		29		40		18		54		92		193		12		554		43		71		36		62		91		53		127		212		131		
	Totals—Examined—Passed	101		3		10		75		99		29		36		18		43		72		174		11		457		41		71		32		57		75		45		101		175		130		
	Totals—Examined—Failed	58		0		5		13		29		0		4		0		11		20		19		1		97		2		0		4		5		16		8		26		37		1		
	Percentage of Failures	57.4		0.0		50.0		14.8		22.7		0.0		10.0		0.0		20.4		21.7		10.9		8.3		17.5		4.7		0.0		11.1		8.1		17.6		15.1		20.5		17.5		0.8		
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H.—Homeopathic; E.—Eclectic.

Marginal Number	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Totals	Examined - Passed	Examined - Failed	Percentage of Failures	No. States Ex. In	Marginal Number
	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming						
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
53				3 1	31 0																								42	41	1	2.4	6	53
54					5 3																								7	5	2	28.6	1	54
55					12 0																								13	13	0	0.0	2	55
56							8 0			2 0							1 0												13	15	0	0.0	4	56
57								1 0		29 29							3 0				1 0	1 0	1 0		1 0				67	46	21	31.3	5	57
58		1 0			1 0					33 5			1 0	2 0	3 0	1 0	3 0												82	77	5	6.1	17	58
59					1 0			2 1		16 0						1 0													21	21	0	0.0	6	59
60										24 6																			26	19	7	19.4	5	60
61							1 0	1 0		95 14						2 0													113	99	14	12.4	5	61
62								5 1		16 17		1 0																	48	30	18	37.5	8	62
63								1 0		7 3																			12	9	3	25.0	3	63
64										18 5			1 0		1 0														29	24	5	17.2	7	64
65	1 0						1 0	8 0		63 10			1 0			1 0				1 0									91	80	11	12.1	11	65
66										56 7																			63	56	7	11.1	1	66
67											4 9			0 1				2 12	13 0	0 2						1 1			28	10	18	64.3	8	67
68											18 6																		36	28	8	22.2	3	68
69										0 1			11 0							1 1					1 0				12	11	1	8.3	2	69
70										0 2			16 7																34	23	11	32.4	9	70
71				0 1						0 1			12 0													3 0			17	15	2	11.8	6	71
72										1 0			21 10	1 0		1 0													66	56	10	15.2	4	72
74			2 0										25 0	11 0															31	31	0	0.0	6	73
75															12 3										10 0				16	16	0	0.0	4	74
76								1 0		1 2						8 1													27	24	3	11.1	4	75
77		2 0		1 0			2 0	10 2		9 4	16 0		2 0	1 0	3 0	18 0	1 0	1 0		1 0			1 0		3 0				21	18	3	14.3	8	76
78										1 3	1 0		1 0		1 0	20 0	1 1												86	80	6	6.2	29	77
79																1 0													42	34	8	19.0	12	78
80	1 0		3 0	1 0				1 0		5 1	10 0		3 0	1 0		10 0		2 0			1 0	1 0		1 0	3 0		2 0		5	4	1	20.0	4	79
81															1 0	1 1									1 0				56	55	1	1.8	25	80
82			1 0					2 0		4 2																			2	2	0	0.0	2	81
83											1 1							20 5											15	12	3	20.0	8	82
84																				1 7									31	25	6	19.4	4	83
85		0 2	5 1								0 1			1 3			0 1	4 4		16 23	14 1	0 1		0 2		0 1			12	4	8	66.7	3	84
86		19 5		1 0					1 1		0 3			2 0		1 0		4 8		11 16	5 2				1 1				136	70	66	48.5	22	85
87		1 1	1 2																	2 21									104	63	41	39.4	14	86
88			1 0																	23 0	6 0				1 0				44	8	36	81.8	7	87
89															1 0						18 1								50	47	3	6.4	13	88
90																					18 0								21	20	1	4.8	3	89
91																					10 0								18	18	0	0.0	1	90
92			6 0							1 0											12 0								10	10	0	0.0	1	91
93							3 1			6 1			1 0				2 0						33 0	2 0					29	29	0	0.0	3	92
94										1 0	12 2													70 6		5 0			52	49	3	5.8	10	93
95		4 0						1 0		1 3														3 0					98	89	9	8.2	6	94
96				1 3						0 2		3 0													1 0		45 1		12	9	3	25.0	4	95
97												1 0					0 1												60	54	6	10.0	7	96
98										2 0																			1	1	0	0.0	1	97
99																	1 0												2	1	1	50.0	2	98
100										4 1			1 0																6	6	0	0.0	4	99
101																													2	2	0	0.0	2	100
102										2 0						1 0	1 0												6	5	1	16.7	2	101
103				4 0									1 0																1	1	0	0.0	1	102
104																													14	14	0	0.0	7	103
105			1 0							1 10		1 0			2 0	2 2				4 1					1 0				3	3	0	0.0	3	104
106		6 6	4 2	2 2					1 0	3 5	1 0		2 0	3 1	7 4	13 8		2 1	5 0	2 13	1 2			3 0	4 0	6 1	1 1		46	23	23	50.0	18	105
	43	62	184	41	65	1	33	47	5	617	108	12	162	48	55	113	24	96	18	150	128	9	27	98	58	52	78	3	232	137	105	45.3	35	106
	43	47	156	33	60	1	32	41	3	473	78	12	144	40	45	94	20	66	16	65	115	8	27	89	56	48	74	3	4549					
	0	15	28	8	5	0	1	6	2	144	30	1	18	8	10	19	4	30	2	85	13	1	0	9	2	4	4	0	3748					
	0.0	24.2	15.2	19.5	7.7	0.0	3.0	12.8	40.0	23.3	27.8	7.7	11.1	16.7	18.2	16.8	16.7	31.2	11.1	56.7	7.0	11.1	0.0	9.2	3.4	7.7	5.1	0.0			801			
																																17.6		
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number	NAME OF COLLEGE	Graduates of All Years					Graduates of 1910-1914					Graduates of 1909 and Previous					Graduates of 1914					Marginal Number
		Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	
	ALABAMA																					
1	Birmingham Medical College	60	34	26	43.3	6	59	33	26	44.1	5	1	1	0	0.0	1	33	17	16	48.5	3	1
2	University of Alabama, School of Medicine	41	38	3	7.3	7	34	33	1	2.9	5	7	5	2	28.6	3	17	17	0	0.0	3	2
	ARKANSAS																					
3	University of Arkansas, Medical Dept.	44	38	6	13.6	5	42	36	6	14.3	5	2	2	0	0.0	1	31	29	2	6.5	3	3
	CALIFORNIA																					
4	California Eclectic Medical College.—E.	15	8	7	46.7	5	15	8	7	46.7	5	...	...	...	....	..	13	8	5	38.5	4	4
5	College of Medical Evangelists	5	3	2	40.0	1	5	3	2	40.0	1	...	...	...	....	..	5	3	2	40.0	1	5
6	College of Physicians and Surgeons, Los Angeles	41	37	4	9.8	5	41	37	4	9.8	5	...	...	...	....	..	34	30	4	11.8	3	6
7	College of Phys. and Surgs., San Francisco	11	4	7	63.6	4	7	2	5	71.4	3	4	2	2	50.0	2	4	1	3	75.0	2	7
8	Hahnemann Medical College of the Pacific.—H.	8	6	2	25.0	2	8	6	2	25.0	2	...	...	...	....	..	4	4	0	0.0	2	8
9	Leland Stanford Junior Univ., School of Med.	11	10	1	9.1	1	11	10	1	9.1	1	...	...	...	....	..	11	10	1	9.1	1	9
10	Oakland College of Medicine and Surgery	4	3	1	25.0	1	4	3	1	25.0	1	...	...	...	....	..	3	2	1	33.3	1	10
11	University of California, Medical School	17	16	1	5.9	2	15	15	0	0.0	1	2	1	1	50.0	1	12	12	0	0.0	1	11
	COLORADO																					
12	University of Colorado, School of Medicine	39	39	0	0.0	11	36	36	0	0.0	9	3	3	0	0.0	2	13	13	0	0.0	3	12
	CONNECTICUT																					
13	Yale Medical School	24	23	1	4.2	7	20	19	1	5.0	6	4	4	0	0.0	3	4	4	0	0.0	2	13
	DISTRICT OF COLUMBIA																					
14	Georgetown University School of Medicine	34	31	3	8.8	14	30	28	2	6.7	12	4	3	1	25.0	4	6	6	0	0.0	4	14
15	George Washington University Medical School	24	23	1	4.2	12	20	20	0	0.0	10	4	3	1	25.0	3	10	10	0	0.0	3	15
16	Howard University School of Medicine	30	21	9	30.0	13	24	18	6	25.0	12	6	3	3	50.0	5	12	7	5	41.7	5	16
	GEORGIA																					
17	Atlanta Medical College	167	155	12	7.3	5	166	155	11	6.6	6	1	0	1	100.0	1	166	155	11	6.6	6	17
18	Georgia College of Eclectic Med. and Surg.—E.	15	6	9	60.0	3	15	6	9	60.0	3	...	...	...	....	..	13	5	8	61.5	2	18
19	Southern College of Medicine and Surgery	13	3	10	76.9	4	12	2	10	83.3	3	1	1	0	0.0	1	2	0	2	100.0	1	19
20	University of Georgia, Medical Dept.	31	30	1	3.2	4	30	29	1	3.3	4	1	1	0	0.0	1	22	22	0	0.0	3	20
	ILLINOIS																					
21	Bennett Medical College	142	119	23	15.6	23	137	115	22	16.1	21	5	4	1	20.0	4	87	75	12	13.8	9	21
22	Chicago College of Medicine and Surgery	242	185	57	23.6	31	235	182	53	22.6	31	7	3	4	57.1	4	161	126	35	21.7	19	22
23	Hahnemann Medical College and Hospital.—H.	34	25	9	26.5	7	32	23	9	28.1	6	2	2	0	0.0	2	15	9	6	40.0	3	23
24	Jenner Medical College	13	8	5	38.4	3	11	7	4	36.3	1	2	1	1	50.0	2	7	6	1	14.3	1	24
25	Northwestern University Medical School	98	91	7	7.1	21	84	78	6	7.1	16	14	13	1	7.2	9	66	63	3	4.5	11	25
26	Rush Medical College	137	129	8	5.8	23	119	114	5	4.2	20	18	15	3	16.7	12	76	74	2	2.6	10	26
27	University of Illinois College of Medicine	131	122	9	6.9	17	131	122	9	7.1	17	...	...	...	....	..	113	104	9	8.0	14	27
	INDIANA																					
28	Indiana University School of Medicine	22	22	0	0.0	1	22	22	0	0.0	..	...	...	...	....	..	22	22	0	0.0	1	28
	IOWA																					
29	State University of Iowa College of Medicine	22	19	3	13.6	8	15	14	1	6.7	3	7	5	2	28.6	5	14	14	0	0.0	2	29
30	State Univ. of Iowa Coll. of Homeo. Med.—H.	6	6	0	0.0	5	2	2	0	0.0	1	4	4	0	0.0	4	....	....	...	....	..	30
	KANSAS																					
31	University of Kansas School of Medicine	13	12	1	7.7	3	11	11	0	0.0	2	2	1	1	50.0	1	10	10	0	0.0	1	31
	KENTUCKY																					
32	University of Louisville, Medical Dept.	83	64	19	22.9	24	75	58	17	22.7	19	8	6	2	25.0	6	48	47	1	2.1	10	32
	LOUISIANA																					
33	Tulane University of Louisiana, School of Med.	103	99	4	3.9	12	94	93	1	1.1	10	9	6	3	44.4	7	69	69	0	0.0	5	33
	MAINE																					
34	Medical School of Maine	32	30	2	6.2	4	30	28	2	6.7	3	2	2	0	0.0	2	23	21	2	8.7	3	34
	MARYLAND																					
35	College of Physicians and Surgeons, Baltimore	73	62	11	15.1	19	64	55	9	14.1	15	9	7	2	22.2	7	36	30	6	16.7	9	35
36	Johns Hopkins University, Medical Dept.	78	74	4	5.1	20	73	69	4	5.5	20	5	5	0	0.0	3	39	39	0	0.0	11	36
37	University of Maryland School of Medicine	104	96	8	7.7	21	97	90	7	7.2	17	7	6	1	14.3	5	81	77	4	4.9	14	37
	MASSACHUSETTS																					
38	Boston University School of Medicine.—H.	32	28	4	12.5	10	29	26	3	10.3	9	3	2	1	33.3	2	22	20	2	9.1	5	38
39	College of Physicians and Surgeons, Boston	37	12	25	67.6	10	29	9	20	69.0	7	8	3	5	62.5	5	3	3	0	0.0	3	39
40	Medical School of Harvard University	83	78	5	6.0	19	64	61	3	4.7	15	19	17	2	10.5	12	36	35	1	2.8	11	40
41	Tufts College Medical School	105	92	13	12.4	13	93	83	10	10.8	9	12	9	3	25.0	9	46	44	2	4.3	5	41
	MICHIGAN																					
42	Detroit College of Medicine and Surgery	59	58	1	1.7	6	56	55	1	1.8	3	3	3	0	0.0	3	54	54	0	0.0	1	42
43	University of Michigan, Dept. of Med. and Surg.	59	59	0	0.0	12	51	51	0	0.0	7	8	8	0	0.0	7	38	38	0	0.0	3	43
44	University of Michigan, Homeo. Med. Coll.—H.	28	24	4	14.3	6	27	23	4	14.8	5	1	1	0	0.0	1	23	22	1	4.3	2	44
	MINNESOTA																					
45	University of Minnesota, Medical School	34	34	0	0.0	4	31	31	0	0.0	4	3	3	0	0.0	3	27	27	0	0.0	1	45
	MISSOURI																					
46	American Medical College	49	37	12	24.5	9	46	34	12	26.1	9	3	3	0	0.0	3	35	27	8	22.9	4	46
47	Eclectic Medical University.—E.	18	13	5	27.8	3	17	12	5	29.4	3	1	1	0	0.0	1	17	12	5	29.4	3	47
48	Ensworth Medical College	19	15	4	21.1	7	16	14	2	12.5	4	3	1	2	66.7	3	11	11	0	0.0	4	48
49	Kansas City Hahnemann Medical College.—H.	21	21	0	0.0	4	20	20	0	0.0	3	1	1	0	0.0	1	16	16	0	0.0	3	49
50	St. Louis College of Physicians and Surgeons	44	22	22	50.0	9	32	17	15	46.9	4	12	5	7	58.3	7	22	13	9	40.9	2	50
51	St. Louis University School of Medicine	65	61	4	6.2	12	60	59	1	1.7	10	5	2	3	60.0	4	49	48	1	2.0	7	51
52	Washington University, Medical School	27	27	0	0.0	7	21	21	0	0.0	7	6	6	0	0.0	3	14	14	0	0.0	2	52

H.—Homeopathic; E.—Eclectic.

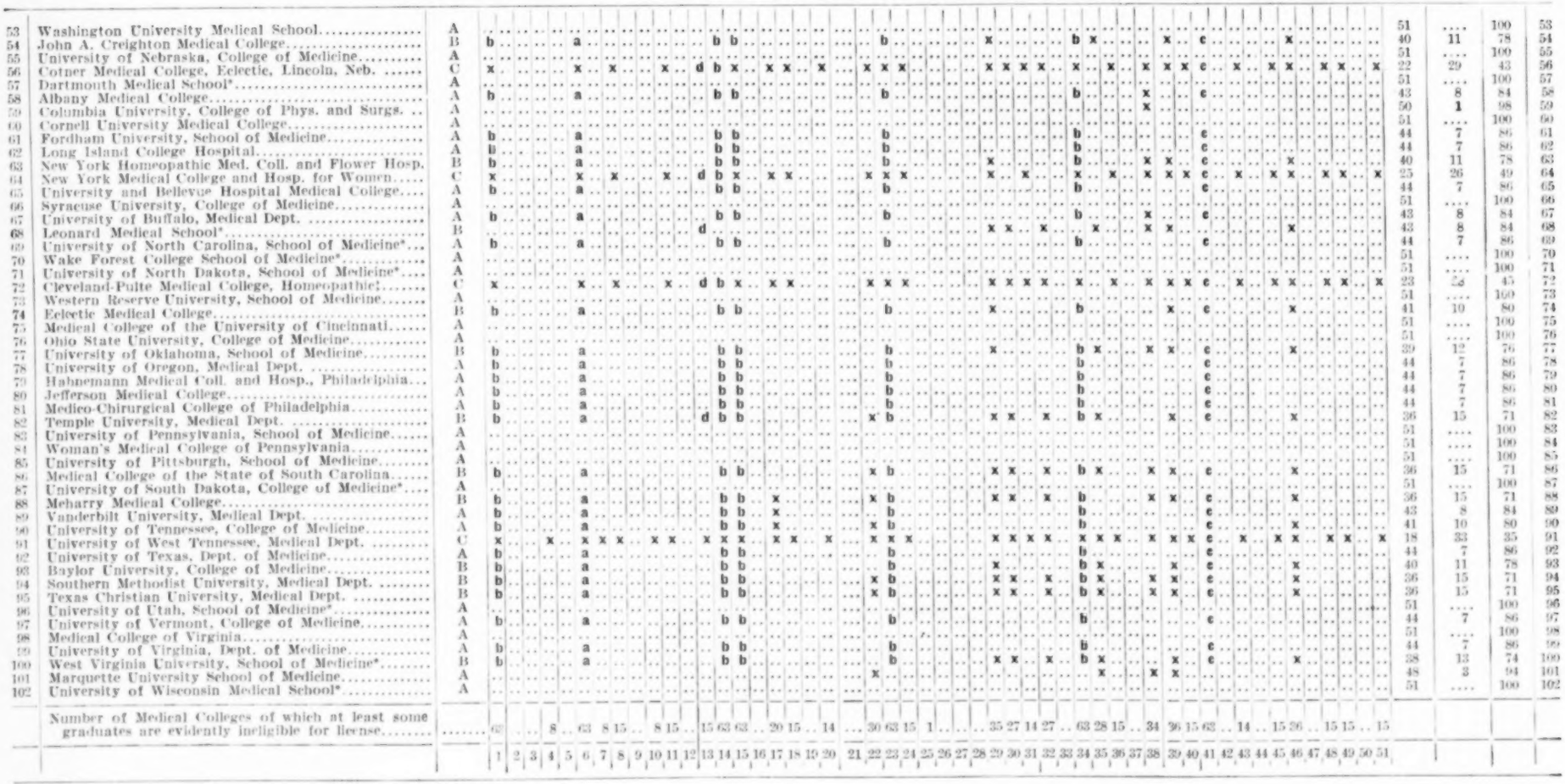
Marginal Number	NAME OF COLLEGE	Graduates of All Years					Graduates of 1910-1914					Graduates of 1909 and Previous*					Graduates of 1914					Marginal Number
		Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	
	NEBRASKA																					
53	John A. Creighton Medical College	45	43	2	4.4	8	42	41	1	2.4	6	3	2	1	33.3	3	29	29	0	0.0	3	53
54	Cotner University Medical College.—E.	9	6	3	33.3	1	7	5	2	28.6	1	2	1	1	50.0	2	5	4	1	20.0	1	54
55	University of Nebraska, College of Medicine	13	13	0	0.0	2	13	13	0	0.0	2	...	...	...	....	..	12	12	0	0.0	1	55
	NEW HAMPSHIRE																					
56	Dartmouth Medical School	15	15	0	0.0	4	13	13	0	0.0	4	2	2	0	0.0	1	4	4	0	0.0	2	56
	NEW YORK																					
57	Albany Medical College	69	48	21	30.4	6	67	46	21	31.3	5	2	2	0	0.0	2	33	23	10	30.3	2	57
58	Columbia University, Coll. of Phys. and Surgs.	96	91	5	5.2	21	82	77	5	6.1	17	14	14	0	0.0	10	41	40	1	2.4	10	58
59	Cornell University, Medical College	21	21	0	0.0	6	21	21	0	0.0	6	...	...	...	....	..	10	10	0	0.0	1	59
60	Fordham University, School of Medicine	37	29	8	21.6	6	36	29	7	19.4	5	1	0	1	100.0	1	16	14	2	12.5	2	60
61	Long Island College Hospital	114	100	14	12.3	6	113	99	14	12.4	5	1	1	0	0.0	1	71	65	6	8.5	1	61
62	New York Homeo. Med. Coll. and Flower Hosp.—H.	50	31	19	38.0	9	48	30	18	37.5	8	2	1	1	50.0	2	13	8	5	38.5	2	62
63	New York Med. Coll. and Hosp. for Women.—H.	12	9	3	25.0	3	12	9	3	25.0	3	...	...	...	....	..	8	6	2	25.0	2	63
64	Syracuse University, College of Medicine	30	25	5	16.7	7	29	24	5	17.2	7	1	1	0	0.0	1	8	6	2	25.0	1	64
65	University and Bellevue Hospital Med. Coll.	96	84	12	12.5	15	91	80	11	12.1	11	5	4	1	20.0	5	56	53	3	5.4	5	65
66	University of Buffalo, Medical Dept.	63	56	7	11.1	1	63	56	7	11.1	1	...	...	...	....	..	36	35	1	2.8	1	66
	NORTH CAROLINA																					
67	Leonard Medical School	28	10	18	64.3	8	28	10	18	64.3	8	...	...	...	....	..	9	7	2	22.2	3	67
68	North Carolina Medical College	40	29	11	27.5	4	36	28	8	22.2	3	4	1	3	75.0	3	28	24	4	14.3	3	68
	OHIO																					
69	Cleveland-Pulte Medical College.—H.	12	11	1	8.3	2	12	11	1	8.3	2	...	...	...	....	..	10	10	0	0.0	1	69
70	Eclectic Medical College.—E.	39	27	12	30.8	11	34	23	11	32.4	9	5	4	1	20.0	3	27	19	8	29.6	6	70
71	Medical College of the University of Cincinnati	17	15	2	11.8	6	17	15	2	11.8	6	...	...	...	....	..	15	15	0	0.0	4	71
72	Ohio State University, College of Medicine	66	56	10	15.2	4	66	56	10	15.2	4	...	...	...	....	..	62	53	9	14.5	2	72
73	Western Reserve University, School of Medicine	31	31	0	0.0	6	31	31	0	0.0	6	...	...	...	....	..	30	30	0	0.0	5	73
	OKLAHOMA																					
74	University of Oklahoma, School of Medicine	16	16	0	0.0	4	16	16	0	0.0	4	...	...	...	....	..	16	16	0	0.0	4	74
	OREGON																					
75	University of Oregon, Dept. of Medicine	28	25	3	10.7	4	27	24	3	11.1	4	1	1	0	0.0	1	16	15	1	6.3	4	75
	PENNSYLVANIA																					
76	Hahnemann Medical College and Hospital.—H.	21	18	3	14.3	8	21	18	3	14.3	8	...	...	...	....	..	6	6	0	0.0	4	76
77	Jefferson Medical College	110	103	7	6.4	34	96	90	6	6.2	29	14	13	1	7.2	12	47	44	3	6.4	17	77
78	Medico-Chirurgical College of Philadelphia	46	35	11	23.9	15	42	34	8	19.0	12	4	1	3	75.0	2	16	11	5	31.3	8	78
79	Temple University, Dept. of Medicine	5	4	1	20.0	4	5	4	1	20.0	4	...	...	...	....	..	2	2	0	0.0	2	79
80	University of Pennsylvania, School of Medicine	67	65	2	3.0	27	56	55	1	1.8	25	11	10	1	9.1	10	23	23	0	0.0	10	80
81	University of Pittsburgh, School of Medicine	2	2	0	0.0	2	2	2	0	0.0	2	...	...	...	....	..	....	....	...	....	..	81
82	Woman's Medical College of Pennsylvania	23	19	4	17.4	11	15	12	3	20.0	8	8	7	1	12.5	5	5	4	1	20.0	3	82
	SOUTH CAROLINA																					
83	Medical College of the State of South Carolina	34	26	8	23.5	5	31	25	6	19.4	4	3	1	2	66.7	2	22	20	2	9.1	3	83
	TENNESSEE																					
84	Lincoln Memorial University, Medical Dept.	12	4	8	66.7	3	12	4	8	66.7	3	...	...	...	....	..	8	2	6	75.0	2	84
85	Meharry Medical College	153	75	78	51.0	22	136	70	66	48.5	22	17	5	12	70.6	10	98	54	44	44.9	17	85
86	University of Tennessee, College of Medicine	111	69	42	37.8	17	104	63	41	39.4	14	7	6	1	14.3	7	80	51	29	36.3	10	86
87	University of West Tennessee, College of Med.	47	8	39	83.0	8	44	8	36	81.8	7	3	0	3	100.0	2	37	7	30	81.1	4	87
88	Vanderbilt University, Medical Dept.	59	54	5	8.5	17	50	47	3	6.4	13	9	7	2	22.2	8	31	29	2	6.5	9	88
	TEXAS																					
89	Baylor University, College of Medicine	21	20	1	4.8	3	21	20	1	4.8	3	...	...	...	....	..	19	18	1	5.3	2	89
90	Southern Methodist University, Medical Dept.	18	18	0	0.0	1	18	18	0	0.0	1	...	...	...	....	..	16	16	0	0.0	1	90
91	Texas Christian University, School of Medicine	10	10	0	0.0	1	10	10	0	0.0	1	...	...	...	....	..	10	10	0	0.0	1	91
92	University of Texas, Dept. of Medicine	31	31	0	0.0	5	29	29	0	0.0	3	2	2	0	0.0	2	23	23	0	0.0	3	92
	VERMONT																					
93	University of Vermont College of Medicine	57	54	3	5.3	12	52	49	3	5.8	10	5	5	0	0.0	3	31	30	1	3.2	9	93
	VIRGINIA																					
94	Medical College of Virginia	100	91	9	8.1	6	98	89	9	9.2	6	2	2	0	0.0	2	81	76	5	6.2	5	94
95	University of Virginia, Dept. of Medicine	15	12	3	20.0	7	12	9	3	25.0	4	3	3	0	0.0	3	6	5	1	16.7	3	95
	WISCONSIN																					
96	Marquette University, School of Medicine	61	54	7	11.5	8	60	54	6	10.0	7	1	0	1	100.0	1	43	42	1	2.3	2	96
	CANADIAN																					
97	Dalhousie University, Faculty of Medicine	1	1	0	0.0	1	1	1	0	0.0	1	...	...	...	....	..	1	1	0	0.0	1	97
98	Laval University, Medical Faculty	3	1	2	66.7	3	2	1	1	50.0	2	1	0	1	100.0	1	....	....	...	....	..	98
99	McGill University, Faculty of Medicine	12	12	0	0.0	9	6	6	0	0.0	4	6	6	0	0.0	6	2	2	0	0.0	2	99
100	Montreal School of Medicine and Surgery	2	2	0	0.0	2	2	2	0	0.0	2	...	...	...	....	..	....	....	...	....	..	100
101	Queen's University, Faculty of Medicine	10	8	2	20.0	4	6	5	1	16.7	2	4	3	1	25.0	3	....	....	...	....	..	101
102	University of Manitoba, Manitoba Med. Coll.	1	1	0	0.0	1	1	1	0	0.0	1	...	...	...	....	..	1	1	0	0.0	1	102
103	University of Toronto, Faculty of Medicine	23	23	0	0.0	9	14	14	0	0.0	7	9	9	0	0.0	5	2	2	0	0.0	1	103
104	Western University, Medical Faculty	5	5	0	0.0	5	3	3	0	0.0	3	2	2	0	0.0	2	....	....	...	....	..	104
105	Foreign Colleges	117	68	49	41.9	27	46	23	23	50.0	18	71	45	26	29.6	21	....	....	...	....	..	105
106	Miscellaneous Medical Colleges	506	301	205	40.5	45	232	127	105	45.3	35	274	174	100	36.4	41	8	2	6	75.0	3	106
107	Undergraduates	293	113	180	61.4	4	....	....	....	....	..	...	...	...	....	..	....	....	...	....	..	107
	Totals	5570	4370	1200	21.6	..	4549	3748	801	17.6	..	728	509	219	30.0	..	2868	2504	364	12.7		

H —Homeopathic; E.—Eclectic.

TABLE D.—NON-RECOGNITION OF MEDICAL COLLEGES

This Table, Based on Official Reports, Shows the Numerous Pitfalls to be Avoided by Prospective Medical Students

| Marginal Number | COLLEGE | Classification by Council on Medical Education† | 1 Alabama | 2 Alaska | 3 Arizona | 4 Arkansas | 5 California | 6 Colorado | 7 Connecticut | 8 Delaware | 9 Dist. of Columbia | 10 Florida | 11 Georgia | 12 Idaho | 13 Illinois | 14 Indiana | 15 Iowa | 16 Kansas | 17 Kentucky | 18 Louisiana | 19 Maine | 20 Maryland | 21 Massachusetts | 22 Michigan | 23 Minnesota | 24 Mississippi | 25 Missouri | 26 Montana | 27 Nebraska | 28 Nevada | 29 New Hampshire | 30 New Jersey | 31 New Mexico | 32 New York | 33 North Carolina | 34 North Dakota | 35 Ohio | 36 Oklahoma | 37 Oregon | 38 Pennsylvania | 39 Rhode Island | 40 South Carolina | 41 South Dakota | 42 Tennessee | 43 Texas | 44 Utah | 45 Vermont | 46 Virginia | 47 Washington | 48 West Virginia | 49 Wisconsin | 50 Wyoming | 51 Porto Rico | Reported Non-Recognition by State Licensing Boards: No. of State Boards apparently giving full recognition | No. of State Boards reporting not fully recognized | Percentage of State Boards granting full recognition | Marginal Number |
|---|---|---



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CONTINUED FROM PAGE 1401

dates have been out of college and to the fact that they are required to take the same examination as recent graduates. Undoubtedly the less favorable conditions in medical colleges at the time these physicians graduated have some bearing on this result. Justice to such candidates, who have been licensed, but who, for good reasons, desire to change their locations, is the strongest argument for interstate reciprocity in medical licensure, or for special percentage allowances at the examinations for years of practice. The total number of these candidates is diminishing each year as increased reciprocal relations are established. As a rule, the states which do not have reciprocal relations with other states (as Florida, Montana, Massachusetts, Oregon, Washington, see Table L) examined the largest numbers of old practitioners.

GRADUATES OF 1914 EXAMINED DURING 1914

Table C also gives the results for the graduates of 1914 who were examined during the year by the state boards, and shows that 2,868, or 51.5 per cent. of all candidates examined during the year, graduated in 1914, including six who graduated from Canadian medical colleges. Educational statistics show that the medical colleges of the United States graduated 3,594 students last year; therefore, about 80 per cent. of all graduates in 1914 took examinations for license during that year. In some of the states, graduates in medicine are allowed to serve as hospital interns without first becoming licensed practitioners, which doubtless accounts for some of the remaining 20 per cent. Of the 1914 graduates examined, 364, or 12.7 per cent., failed.

Table C permits an interesting study of medical schools from the point of view of state board examinations. For some colleges a marked improvement in teaching methods is apparent from the fact that while the percentages of failures are high for old practitioners, they are lower for recent graduates and still lower for graduates of 1914. Other colleges, however, show no improvement either for recent graduates or for graduates of 1914. In the latter an accurate knowledge of these colleges, based on a careful study which included an inspection of the colleges, bears out what the figures of this table indicate, that some of these institutions are teaching medicine no better to-day than they did ten or more years ago.

NON-RECOGNITION OF MEDICAL COLLEGES

Table D shows for each college the state in which its diplomas are not given unqualified recognition. Non-recognition is expressed by different terms in different states. Some boards list colleges as "in good standing" or "not in good standing," some give them as "reputable" or "not reputable"; in New York, full recognition is given only to colleges which are "registered," and in Michigan colleges are divided into groups, only those of Group I having full

TABLES E.—COLLEGES GROUPED BY STATES

Showing the Number Examined and Percentage of Failures

All Colleges of	Graduates: Of All Years		Of 1910 to 1914		Of 1909 & Prev.		Of 1914		State Rank According to the Number Examined	Rank According to Successes at Examinations
	Number Examined	Per Cent. Failed	Number Examined	Per Cent. Failed	Number Examined	Per Cent. Failed	Number Examined	Per Cent. Failed		
Alabama	101	28.7	93	29.0	8	25.0	50	32.0	14	26
Arkansas	44	6.8	42	14.3	2	0.0	31	6.5	22	8
California	112	22.3	106	20.8	6	50.0	86	18.6	12	22
Colorado	39	0.0	36	0.0	3	0.0	13	0.0	23	1
Connecticut	24	4.2	20	5.0	4	0.0	4	0.0	27	5
Dist. of Columbia	88	14.8	74	10.8	14	35.7	28	17.9	15	17
Georgia	226	14.2	223	13.9	3	66.7	203	10.3	8	16
Illinois	797	14.8	749	14.4	48	20.8	525	13.0	1	17
Indiana	22	0.0	22	0.0	..	....	22	0.0	28	1
Iowa	28	10.7	17	5.9	11	18.2	14	0.0	26	14
Kansas	13	7.7	11	0.0	2	50.0	10	0.0	31	10
Kentucky	83	22.9	75	22.7	8	25.0	48	2.1	16	23
Louisiana	103	3.9	94	1.1	9	33.3	69	0.0	13	4
Maine	32	6.2	30	6.7	2	0.0	23	8.7	25	7
Maryland	255	9.0	234	8.5	21	14.3	156	6.4	6	11
Massachusetts	257	18.3	215	16.7	42	26.2	107	4.7	5	20
Michigan	146	3.4	134	3.7	12	0.0	115	0.9	10	3
Minnesota	34	0.0	31	0.0	3	0.0	27	0.0	24	1
Missouri	243	19.3	212	16.5	31	41.9	164	14.0	7	21
Nebraska	67	7.5	62	4.8	5	40.0	46	2.2	19	9
New Hampshire	15	0.0	13	0.0	2	0.0	4	0.0	30	1
New York	588	16.0	562	16.2	26	11.5	292	11.0	2	18
North Carolina	68	27.9	64	40.6	4	75.0	37	16.2	18	25
Ohio	165	17.6	160	15.0	5	20.0	144	11.8	9	19
Oklahoma	16	0.0	16	0.0	..	....	16	0.0	29	1
Oregon	28	10.7	27	11.1	1	0.0	16	6.3	26	14
Pennsylvania	274	10.2	237	9.2	37	16.2	99	9.1	4	12
South Carolina	34	23.5	31	19.4	3	66.7	22	9.1	24	24
Tennessee	382	45.0	346	41.6	36	50.0	254	43.7	3	27
Texas	80	1.2	78	1.3	2	0.0	68	1.5	17	2
Vermont	57	5.3	52	5.8	5	0.0	31	3.2	21	6
Virginia	115	10.4	110	10.9	5	0.0	87	6.9	11	13
Wisconsin	61	11.5	60	10.0	1	100.0	43	2.3	20	15
Totals Ex. in 1914	4597	16.6	4236	15.9	361	25.2	2854	12.5		

This table gives data relating to the group of colleges in each state. For example, it shows that, of all the medical schools in Illinois, 797 graduates of various years were examined by state boards during 1914, and of this number, 14.8 per cent. failed. Of the 749 who graduated in recent years (1910 to 1914 inclusive), 14.4 per cent. failed; of the 48 who graduated previous to 1910, 20.8 per cent. failed, and of the 525 graduates of 1914, 13.0 per cent. failed.

The ninth column gives the rank of each state group of colleges according to the number of graduates examined. The Illinois group of colleges leads, having 797 graduates examined by state boards during 1914, followed by New York with 588, Tennessee with 382, Pennsylvania with 274, Massachusetts with 257 and Maryland with 255.

The tenth column gives the rank of each state group of colleges according to the success of the graduates at the examinations. It is interesting to compare the figures of these two last columns. While the Illinois group ranks first according to the number examined it ranks seventeenth in the success of its graduates at the examinations. While New York ranks second as to the number examined, it ranks eighteenth in the success of its graduates at the examinations, and while Tennessee ranks third as to the number examined, it ranks as the twenty-seventh in the success of its graduates at the examinations.

TOTAL RESULTS

Comparison with Previous Years.

Year	Table A: Total Examined	Examined—Passed	Examined—Failed	Percentage Failed	B: Recent Grads. Examined	Percentage Failed	C: Older Prac. Examined	Percentage Failed	A: Non-Grads. Examined	Percentage Failed	K: Registered without Written Examination	Total Registered
1904	7035	5672	1363	19.3	4773	14.1	579	29.7	515	52.6	999	6671
1905	7170	5680	1490	20.8	6054	16.2	690	37.7	472	61.9	394	6074
1906	8035	6368	1667	20.7	6250	16.4	793	27.1	703	51.3	1497	7865
1907	7271	5723	1548	21.3	5922	15.1	675	27.7	674	69.6	1426	7149
1908	7770	6084	1686	21.7	6477	17.8	796	31.5	494	56.8	1276	7360
1909	7287	5857	1430	19.6	5891	15.4	958	30.0	438	54.1	1373	7220
1910	7004	5712	1292	18.4	5678	14.9	973	29.1	353	45.6	1640	7352
1911	6960	5578	1382	19.9	5685	17.2	945	29.4	330	58.5	1246	6824
1912	6879	5466	1413	20.5	5770	18.6	856	29.2	253	34.8	1257	6723
1913	6435	5236	1199	18.6	5390	16.5	225	32.1	251	37.8	1265	6501
1914	5570	4370	1200	21.6	4549	17.6	728	30.0	293	61.4	1427	5797

RESULTS FOR LARGER COLLEGES

Comparison with Previous Years (Table F)

Year	Colleges Represented	Total Examined	Per Cent. Failed	Colleges, 100 or More Examined	Total Examined	Per Cent. Failed	Colleges, 50 to 100 Examined	Total Examined	Per Cent. Failed	Colleges, Less than 50 Examined	Total Examined	Per Cent. Failed	Foreign, Misc., and Non-grads. Exam'd	Per Cent. Failed
1904	149	6241	16.4	14	2271	11.7	28	1817	16.9	107	2153	21.0	794	43.1
1905	153	6411	18.3	14	2350	12.4	37	2543	17.7	102	1518	28.9	759	51.1
1906	151	6938	17.3	16	2504	14.5	34	2381	16.9	96	2053	21.3	1097	42.5
1907	146	6207	13.8	12	1626	12.7	36	2578	14.7	98	2003	13.6	1064	55.5
1908	137	6491	17.2	19	2596	15.6	26	1825	15.5	92	2070	20.8	1279	14.6
1909	134	6341	16.2	17	2476	16.9	27	1920	12.3	90	1945	19.2	946	42.6
1910	121	5953	15.3	17	2379	13.3	25	1791	13.7	79	1783	19.3	1051	36.5
1911	119	6062	17.2	18	2508	11.0	28	1895	17.1	73	1659	20.1	898	37.6
1912	110	5563	17.1	12	1776	15.6	31	2148	17.3	67	1639	18.5	790	37.0
1913	99	5339	15.2	15	2143	12.6	27	815	37.5	57	1381	17.1	1096	35.2
1914	96	4597	16.6	13	1719	16.5	19	1342	12.5	64	1536	20.2	973	45.0

recognition. This table also shows the latest rating given to each college by the Council on Medical Education.

The information given in this table is from official correspondence, and the data have been carefully verified. From the point of view of the prospective student who may be selecting a medical college, the facts are highly important. The table shows that there are 33 medical colleges which have complete recognition in all states. Four high grade colleges for one reason or another have apparently not complied with the requirements in one state. If the student has completed two or more years' work in a recognized college or university before he gains entrance to a medical college, he may take his choice from among 29 other colleges; otherwise he will find that his diploma will not enable him to secure a license in nine states. If he gets his medical training in one of the remaining 36 colleges, he will find on graduation that his diploma is not recognized in from 10 to 33 states!

RECOGNITION OF MEDICAL COLLEGES

(Based on Table D)

	Number of Colleges
Recognized by all State Boards	33
Not recognized by 1 to 9 State Boards	34
Not recognized by 10 to 17 State Boards	20
Not recognized by 23 to 33 State Boards	15
Total	102

Without the information published in Table D, these state board statistics would be not merely incomplete—they would be actually misleading. For example, in 1912, thirteen graduates of the Eclectic Medical University of Kansas City, Mo., were examined by the Arkansas Eclectic Board of Medical Examiners and all passed. None was examined elsewhere during the year, so the statistics showed no failures for this college during 1912, making it appear to rank among the best teaching institutions in the country. How different the picture, however, when the facts are told that the Eclectic Medical University is not recognized in Missouri, its home state, and that in 30 states the diplomas of this college are not considered an acceptable qualification for the license to practice medicine!

Thirty-two state licensing boards, to some extent at least, are utilizing their legal power to refuse recognition to medical colleges which do not meet certain educational standards, or which otherwise do not meet the requirements in the respective states. In the other 18 states, however, this table indicates that either the practice acts do not give the boards the right to enforce a requirement of reasonable standards, or else the boards are not exercising their privileges. It is clearly evident that if the graduates of low-standard medical colleges are not eligible for license in 32 states they will flock to the other 18 states which still grant

TABLE F.—COLLEGES HAVING FIFTY OR MORE EXAMINED

TABLE SHOWS TOTAL NUMBER EXAMINED, TOTAL NUMBER PASSED, TOTAL NUMBER FAILED, PERCENTAGE OF FAILURES AND NUMBER OF STATES IN WHICH EACH COLLEGE HAD REPRESENTATIVES

COLLEGE	Graduates of All Years					Graduates of 1910-1914					Graduates of 1909 and Previous					Graduates of 1914					Marginal Number
	Number Examined	Number Passed	Number Failed	Per Cent. Failed	No. of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	No. of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	No. of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	No. of States	
Chicago College of Medicine and Surgery	242	185	57	23.6	31	225	182	53	22.6	31	7	3	4	57.1	4	161	126	35	21.7	19	22
Atlanta Medical College	167	155	12	7.2	5	166	155	11	6.6	17	1	0	1	100.0	1	12	7	5	41.7	5	17
Meharry Medical College	153	75	78	51.0	22	136	70	66	48.5	22	17	5	12	70.6	10	98	54	44	44.9	17	85
Bennett Medical College	142	119	23	15.6	23	137	115	22	16.1	21	5	4	1	25.0	3	87	75	12	13.8	9	21
Rush Medical College	137	129	8	5.8	23	119	114	5	4.2	20	18	15	3	16.7	12	76	74	2	2.6	10	26
University of Illinois College of Medicine	131	122	9	6.9	17	131	122	9	6.8	17	.....	.....	.....	.....	.....	113	104	9	8.0	14	27
Long Island College Hospital	114	100	14	12.3	6	113	99	14	12.4	5	1	1	0	0.0	1	71	65	6	8.5	1	61
University of Tennessee, College of Medicine	111	69	42	37.8	17	104	63	41	39.4	14	7	6	1	14.3	7	5	4	1	20.0	3	86
Jefferson Medical College	110	103	7	6.4	34	96	90	6	6.2	29	14	13	1	7.2	12	47	44	3	6.4	17	77
Tufts College Medical School	105	92	13	12.4	13	93	83	10	10.8	9	12	9	3	25.0	9	46	44	2	4.3	5	41
University of Maryland, School of Medicine	104	96	8	7.7	21	97	90	7	7.2	17	7	6	1	14.3	5	81	77	4	4.9	14	37
Tulane University of Louisiana, School of Med.	103	99	4	3.9	12	94	93	1	1.1	10	9	6	3	44.4	7	69	69	0	0.0	5	33
Medical College of Virginia	100	91	9	8.1	6	98	89	9	8.2	6	2	2	0	0.0	2	81	76	5	6.2	5	94
Northwestern University Medical School	98	91	7	7.1	21	84	78	6	7.1	16	14	13	1	7.2	8	66	63	3	4.5	11	25
Columbia University, College of Phys. and Surgs.	96	91	5	5.2	21	82	77	5	6.1	17	14	14	0	0.0	10	41	40	1	2.4	10	58
University and Bellevue Hospital Medical College	96	84	12	12.5	15	91	80	11	12.1	11	5	4	1	20.0	5	56	53	3	5.4	5	65
University of Louisville, Medical Dept.	83	64	19	22.9	24	75	58	17	22.7	19	8	6	2	25.0	6	48	47	1	2.1	10	32
Medical School of Harvard University	83	78	5	6.0	19	64	61	3	4.7	15	19	17	2	10.5	12	36	35	1	2.8	11	40
Johns Hopkins University, Medical Dept.	78	74	4	5.1	20	73	69	4	5.5	20	5	5	0	0.0	3	39	39	0	0.0	11	36
College of Physicians and Surgeons, Baltimore	73	62	11	15.1	19	64	55	9	14.1	15	9	7	2	22.2	7	36	30	6	16.7	9	35
Albany Medical College	69	48	21	30.4	6	67	46	21	31.3	5	2	2	0	0.0	2	33	23	10	30.3	2	57
University of Pennsylvania, School of Medicine	67	65	2	3.0	27	56	55	1	1.8	25	11	10	1	9.1	10	23	23	0	0.0	19	80
Ohio State University, College of Medicine	66	56	10	15.2	4	66	56	10	15.2	4	.....	.....	.....	.....	.....	62	53	9	14.5	2	72
St. Louis University School of Medicine	65	61	4	6.2	12	60	59	1	1.7	10	5	2	3	60.0	4	49	48	1	2.0	7	51
University of Buffalo, Medical Dept.	63	56	7	11.1	1	63	56	7	11.1	1	.....	.....	.....	.....	.....	36	35	1	2.8	1	66
Marquette University, School of Medicine	61	54	7	11.5	8	60	54	6	10.0	7	1	0	1	100.0	1	43	42	1	2.3	2	86
Birmingham Medical College	60	34	26	43.3	6	59	33	26	44.1	5	1	1	0	0.0	1	33	17	16	48.5	3	1
Detroit College of Medicine and Surgery	59	58	1	1.7	6	56	55	1	1.8	5	3	3	0	0.0	3	54	54	0	0.0	1	42
University of Michigan, Dept. of Med. and Surg.	59	59	0	0.0	12	51	51	0	0.0	7	8	8	0	0.0	7	38	38	0	0.0	3	43
Vanderbilt University, Medical Dept.	59	54	5	8.5	17	50	47	3	6.4	13	9	7	2	22.2	8	31	29	2	6.5	9	88
University of Vermont, College of Medicine	57	54	3	5.3	12	52	49	3	5.8	10	5	5	0	0.0	3	31	30	1	3.2	9	93
New York Homeo. Med. Coll. and Flower Hosp.—H.	50	31	19	38.0	9	48	30	18	37.5	8	2	1	1	50.0	2	13	8	5	38.5	2	62
Totals	3061	2609	452	14.8	..	2840	2434	406	14.3	....	221	175	46	20.8	....	1715	1526	189	11.0		

This table is especially interesting, since it gives data relating to the 32 larger medical colleges arranged according to the number of graduates examined. This allows of comparison between colleges having classes of nearly equal size. For the second consecutive year the Chicago College of Medicine and Surgery has had the largest number, the position having been held by the College of Physicians and Surgeons of Chicago in 1906, 1907 and 1912. In 1908 Jefferson Medical College had the highest number examined. In 1909, 1910 and 1911 the University of Louisville Medical Department had the largest number examined. The first place from the standpoint of the number examined, however, does not always mean first place from the standpoint of scholarship. Note the percentages of failures.

Of the 13 colleges having 100 or more examined, 7 have failure percentages of less than 10, while six stand out prominently with large failure percentages—12.3, 12.4, 15.6, 23.6, 37.8 and 51.0. These high percentages hold for four of these colleges even in respect to graduates of 1914. The three highest failure percentages are for Meharry Medical College, 51.0; University of Tennessee College of Medicine, 37.8, and the Chicago College of Medicine and Surgery, 23.6.

Of the 19 colleges having between 50 and 100 graduates examined, 10 had failure percentages of less than 10; 5 had failure percentages between 10 and 20, and 4 had failure percentages above 20, the three colleges having the highest failure percentages being Birmingham Medical College, 43.3; New York Homeopathic Medical College and Flower Hospital, 38.0, and Albany Medical College, 30.4.

The average percentage of failures for these larger colleges for graduates of 1909 and previous years was 20.8; for graduates of 1910 to 1914 inclusive (recent graduates), 14.3; for graduates of 1914, 11.0, and for graduates of all years, 14.8. Of the 4,567 graduates of the 96 colleges in the United States which had graduates examined by state boards in 1914, these larger (33.3 per cent. of all) schools furnished 3,061, or 66.6 per cent. of the graduates examined.

TABLE G.—COMPARISON OF RESULTS IN HOME STATES AND ELSEWHERE. BASED ON TABLE B

COLLEGES	Total Examined	Results in Home State			Results in Other States		
		Passed	Failed	Per Cent. Failed	Passed	Failed	Per Cent. Failed
ALABAMA —10.8	**93**	**54**	**24**	**30.8**	**12**	**3**	**20.0**
Birmingham Medical College	59	26	23	47.0	7	3	30.0
University of Alabama, School of Med.	34	28	1	3.4	5	0	0.0
ARKANSAS +26.6	**42**	**28**	**2**	**6.7**	**8**	**4**	**33.3**
University of Arkansas, Medical Dept.	42	28	2	6.7	8	4	33.3
CALIFORNIA +14.2	**106**	**76**	**18**	**19.1**	**8**	**4**	**33.3**
California Eclectic Medical College	15	6	5	45.5	2	2	50.0
College of Medical Evangelists	5	3	2	40.0	....	....	....
College of Phys. and Surgs., Los Angeles	41	33	4	10.8	4	0	0.0
Coll. of Phys. and Surgs., San Francisco	7	1	3	25.0	1	2	66.7
Hahnemann Med. Coll. of the Pacific	8	5	2	28.6	1	0	0.0
Leland Stanford Junior University	11	10	1	9.1	....	....	....
Oakland College of Med. and Surg.	4	3	1	25.0	....	....	....
University of California	15	15	0	0.0	....	....	....
COLORADO —	**36**	**21**	**0**	**0.0**	**15**	**0**	**0.0**
University of Colorado	36	21	0	0.0	15	0	0.0
CONNECTICUT +6.3	**20**	**4**	**0**	**0.0**	**15**	**1**	**6.3**
Yale Medical School	20	4	0	0.0	15	1	6.3
DISTRICT OF COLUMBIA —4.2	**74**	**26**	**4**	**13.3**	**46**	**4**	**9.1**
Georgetown University	30	8	0	0.0	20	2	9.1
George Washington University	20	10	0	0.0	10	0	0.0
Howard University	24	8	4	33.3	10	2	16.7
GEORGIA +8.8	**223**	**136**	**11**	**7.4**	**62**	**12**	**16.2**
Atlanta Medical College	166	113	1	0.9	42	10	19.2
Georgia Coll. of Eclectic Med. and Surg.	15	4	8	66.7	2	1	33.3
Southern College of Med. and Surg.	12	0	2	100.0	10	0	0.0
University of Georgia	30	21	0	0.0	8	1	11.1
ILLINOIS —4.6	**749**	**422**	**80**	**15.9**	**219**	**28**	**11.3**
Bennett Medical College	137	86	12	12.2	29	10	25.7
Chicago College of Med. and Surg.	235	113	38	25.2	69	15	17.9
Hahnemann Medical Coll. and Hosp.	32	16	8	33.3	7	1	12.5
Jenner Medical College	11	7	4	36.3	....	....	....
Northwestern University	84	45	6	11.8	33	0	0.0
Rush Medical College	119	64	4	5.9	50	1	2.0
University of Illinois	131	91	8	8.1	31	1	3.1
INDIANA —	**22**	**22**	**0**	**0.0**	....	....	....
Indiana University	22	22	0	0.0	....	....	....
IOWA +25.0	**17**	**13**	**0**	**0.0**	**3**	**1**	**25.0**
State Univ. of Iowa Coll. of Med.	15	13	0	0.0	1	1	50.0
State Univ. of Iowa, Coll. of Homeo. Med.	2	....	....	....	2	0	0.0
KANSAS —	**11**	**10**	**0**	**0.0**	**1**	**0**	**0.0**
University of Kansas	11	10	0	0.0	1	0	0.0
KENTUCKY +40.6	**75**	**40**	**2**	**4.8**	**18**	**15**	**45.4**
University of Louisville	75	40	2	4.8	18	15	45.4
LOUISIANA +2.9	**94**	**59**	**0**	**0.0**	**34**	**1**	**2.9**
Tulane University of Louisiana	94	59	0	0.0	34	1	2.9
MAINE —10.5	**30**	**17**	**2**	**10.5**	**11**	**0**	**0.0**
Medical School of Maine	30	17	2	10.5	11	0	0.0
MARYLAND +0.1	**234**	**86**	**8**	**8.5**	**128**	**12**	**8.6**
College of Phys. and Surgs., Baltimore	64	14	3	17.7	41	6	12.8
Johns Hopkins University	73	29	0	0.0	40	4	9.1
University of Maryland	97	43	5	10.4	47	2	4.1
MASSACHUSETTS +7.5	**215**	**103**	**17**	**13.6**	**71**	**19**	**21.1**
Boston University	29	17	0	0.0	9	3	25.0
College of Phys. and Surgs., Boston	29	4	11	73.3	5	9	64.3
Medical School of Harvard University	64	27	1	3.6	34	2	5.6
Tufts College Medical School	93	60	5	7.7	23	5	17.9
MICHIGAN +22.6	**134**	**116**	**1**	**0.9**	**13**	**4**	**23.5**
Detroit College of Med. and Surg.	56	54	0	0.0	1	1	50.0
Univ. of Michigan, Dept. of Med. and S.	51	41	0	0.0	10	0	0.0
Univ. of Michigan, Homeo. Med. Coll.	27	21	1	4.5	2	3	60.0
MINNESOTA —	**31**	**28**	**0**	**0.0**	**3**	**0**	**0.0**
University of Minnesota	31	28	0	0.0	3	0	0.0
MISSOURI —1.0	**212**	**103**	**22**	**16.9**	**69**	**13**	**15.9**
American Medical College	46	25	7	21.9	9	5	35.7
Eclectic Medical University	17	....	....	....	12	5	29.4
Ensworth Medical College	16	9	2	18.2	5	0	0.0
Kansas City Hahnemann Med. Coll.	20	3	0	0.0	17	0	0.0
St. Louis College of Phys. and Surgs.	32	16	13	44.8	1	2	66.7
St. Louis University	60	41	0	0.0	18	1	5.3
Washington University	21	14	0	0.0	7	0	0.0
NEBRASKA +4.3	**62**	**48**	**2**	**4.0**	**11**	**1**	**8.3**
John A. Creighton Medical College	42	31	0	0.0	10	1	9.1
Cotner University	7	5	2	28.6	....	....	....
University of Nebraska	13	12	0	0.0	1	0	0.0
NEW HAMPSHIRE —	**13**	**8**	**0**	**0.0**	**5**	**0**	**0.0**
Dartmouth Medical School	13	8	0	0.0	5	0	0.0
NEW YORK —13.8	**562**	**387**	**87**	**18.4**	**84**	**4**	**4.6**
Albany Medical College	67	39	20	33.9	7	1	12.5
Columbia University, Coll. of P. and S.	82	53	5	8.6	24	0	0.0
Cornell University Medical College	21	16	0	0.0	5	0	0.0
Fordham University	36	24	6	20.0	5	1	16.7
Long Island College Hospital	113	95	14	12.8	4	0	0.0
N. Y. Homeo. Med. Coll. and Flower Hos.	48	16	17	51.5	14	1	6.7
N. Y. Med. Coll. and Hosp. for Women	12	7	3	30.0	2	0	0.0
Syracuse University	29	18	5	21.8	6	0	0.0
Univ. and Bellevue Hosp. Med. Coll.	91	63	10	13.7	17	1	5.6
University of Buffalo, Med. Dept.	63	56	7	11.1	....	....	....
NORTH CAROLINA +0.2	**64**	**22**	**15**	**40.5**	**16**	**11**	**40.7**
Leonard Medical School	28	4	9	69.2	6	9	60.0
North Carolina Medical College	36	18	6	25.0	10	2	16.7
OHIO +12.1	**160**	**115**	**17**	**12.9**	**21**	**7**	**25.0**
Cleveland-Pulte Medical College	12	11	0	0.0	0	1	100.0
Eclectic Medical College	34	16	7	30.4	7	4	36.3
Med. Coll. of the Univ. of Cincinnati	17	12	0	0.0	3	2	40.0
Ohio State University	66	51	10	16.4	5	0	0.0
Western Reserve University	31	25	0	0.0	6	0	0.0
OKLAHOMA —	**16**	**11**	**0**	**0.0**	**5**	**0**	**0.0**
University of Oklahoma	16	11	0	0.0	5	0	0.0
OREGON —20.0	**27**	**12**	**3**	**20.0**	**12**	**0**	**0.0**
University of Oregon	27	12	3	20.0	12	0	0.0
PENNSYLVANIA +8.1	**237**	**59**	**2**	**3.3**	**156**	**20**	**11.4**
Hahnemann Medical Coll. and Hosp.	21	8	1	11.1	10	2	16.7
Jefferson Medical College	96	18	0	0.0	72	6	7.7
Medico-Chirurgical Coll of Philadelphia	42	20	0	0.0	14	8	36.4
Temple University	5	1	0	0.0	3	1	25.0
University of Pennsylvania	56	10	0	0.0	45	1	2.2
University of Pittsburgh	2	1	0	0.0	1	0	0.0
Woman's Med. Coll. of Pennsylvania	15	1	1	50.0	11	2	15.4
SOUTH CAROLINA —3.3	**31**	**20**	**5**	**20.0**	**5**	**1**	**16.7**
Medical College of South Carolina	31	20	5	20.0	5	1	16.7
TENNESSEE —17.3	**346**	**53**	**67**	**55.8**	**139**	**87**	**38.5**
Lincoln Memorial University	12	1	7	87.5	3	1	25.0
Meharry Medical College	136	16	23	59.0	54	43	44.3
University of Tennessee	104	11	16	59.2	52	25	32.5
University of West Tennessee	44	2	21	91.3	6	15	71.4
Vanderbilt University	50	23	0	0.0	24	3	11.1
TEXAS —1.4	**78**	**63**	**1**	**1.4**	**9**	**0**	**0.0**
Baylor University	21	18	1	5.3	2	0	0.0
Southern Methodist University	18	18	0	0.0	....	....	....
Texas Christian University	10	10	0	0.0	....	....	....
University of Texas	29	22	0	0.0	7	0	0.0
VERMONT +10.3	**52**	**23**	**0**	**0.0**	**26**	**3**	**10.3**
University of Vermont	52	23	0	0.0	26	3	10.3
VIRGINIA +11.8	**110**	**73**	**6**	**7.6**	**25**	**6**	**19.4**
Medical College of Virginia	98	70	6	7.6	19	3	14.3
University of Virginia	12	3	0	0.0	6	3	33.3
WISCONSIN +33.5	**60**	**45**	**1**	**2.2**	**9**	**5**	**35.7**
Marquette University	60	45	1	2.2	9	5	35.7
Totals +2.8	**4236**	**2330**	**337**	**14.6**	**1253**	**266**	**17.5**

In this table the graduates of each college who were examined in the state in which the college is located are grouped in one column, while graduates of that college examined in other states are in another column. For example under Massachusetts, this table shows that, of the 29 graduates of College of Physicians and Surgeons, Boston, who were examined by state boards during 1914, 15 were examined in Massachusetts, of which number 4 passed and 11, or 73.3 per cent., failed, while 12 were examined in other states, of which number 9 passed and 3, or 25.0 per cent., failed.

This table shows that in many instances the graduates have better chances of passing examinations in the state in which their colleges are located than they have elsewhere. This should always be considered in making comparisons between colleges. A low standard college by having all its graduates examined in the home state, may sometimes show a lower percentage of failures than a college of much higher grade which has graduates examined by several states.

The heavy-faced figures give the results by states. The first column of heavy-faced figures preceded by the + and — signs, shows the differences between the percentages of examination in the home state and the examinations elsewhere. The plus sign indicates that graduates have better chances of success in the state where the colleges from which they graduated are located; the minus sign indicates that the chances are better elsewhere. The most marked variations in 1914 were in the examination of the graduates of the colleges of Kentucky, 40.6 per cent.; Wisconsin, 33.5; Arkansas, 26.6; Iowa, 25.0, and Michigan, 22.6, in all of which the chances of the graduates were better in the home state. The marked variations where the graduates' chances were better elsewhere were in Oregon, 20.0 per cent.; Tennessee, 17.3, and New York, 13.8 per cent.

The danger of forming hasty conclusions from these percentages taken alone, however, is very well shown by the figures for Iowa where only 20 graduates of the State University of Iowa, College of Medicine were examined in "other states" and where the failure of one of them could have been accidental. More reliable are the percentages in Tennessee, Illinois, Pennsylvania, Kentucky, New York and Missouri where larger numbers were examined both at home and in "other states." The totals show that on the average the chances of success were 2.8 per cent. better if the graduate took the examination in the state where his college was located.

them recognition. These 18 states, therefore, will literally be the dumping ground of the output of low-grade medical colleges until the licensing boards obtain the needed legal powers or until the boards having the authority take action in the matter.

Study of Totals and Percentages

A study of totals and percentages as compared with previous years is of interest. The total examined in 1914—5,570—is the lowest number of candidates examined for license in any year since the compiling of these statistics began. There was a decrease of 865 below the number examined in 1913 and a decrease of 2,265 below 1906, when 8,035 candidates were examined. Statistics regarding physicians licensed in the various states by reciprocity and by other methods are given in Tables I, J and K. By all methods —examination, reciprocity, under exemption, etc.—5,797 physicians were licensed during 1914, or 704 less than in 1913, and 2,068 less than in 1906, when 7,865 physicians were licensed.

Other deductions from the larger tables have been made and are presented in Tables E to H, which are worthy of study.

Study of Colleges By State Groups

Table E is based on the first three large tables and gives the results for the group of colleges located in each state. It shows what states are furnishing the largest number of physicians, and the failure percentages indicate what kind of training these colleges are furnishing so far as may be judged from the failures of their graduates before state boards. By comparing the percentages of the first column with the other columns, it can be seen whether or not there has been any reduction in failures for graduates of recent years. Of the 33 states having medical colleges which grant degrees, 14 furnished 100 or more candidates examined, and of these 14 groups of colleges, only 3 had failure percentages of less than 10 per cent.; 8 had failure percentages between 10 and 20, and 3 had over 20 per cent. of failures. Of all states, the highest failure percentage was obtained by the Tennessee group with 45 per cent., followed by the Alabama group with 28.7 per cent., and the North Carolina group with 27.9 per cent. of their graduates failing. Other deductions are given with the table.

Study of Larger Colleges

Table F is also based on the three large tables and gives the results of state board examinations as they affect the 32 largest medical colleges. Although these colleges represent one-third of the medical colleges in the United States having graduates examined, they furnish two-thirds of all the candidates for license coming from medical schools of the United States. This table shows, however, that the graduates of large classes by a medical college does not prove excellence of teaching, since several colleges having 100 or more examined have very high failure percentages, and this holds true even for the graduates of 1914. In fact, the larger the college from the point of view of the number of students and graduates, the more serious is inferior teaching ability, indicated by a high failure percentage. In fairness to medical students, and in the interests of the public, such schools should greatly strengthen their teaching facilities or reduce the size of their classes.

Altogether for these schools, 452, or 14.8 per cent. failed, as compared with 20.2 per cent. of failures for the 1,381 candidates from the 64 colleges having less than 50 each examined.

Besides the graduates of the medical colleges of the United States, 973 candidates were examined, made up of 57 graduates of Canadian colleges, 117 foreign college graduates, 506 graduates of miscellaneous colleges and 293 non-graduates. Of these 973 candidates, 438, or 45 per cent. failed.

Results in Home States and Elsewhere

Table G is of much interest, because it shows for each college the results of examinations in the state in which the college is located, as compared with the results of examinations in other states, where there is less possibility of local influence. Of all recent graduates examined in 1914, coming from the 96 medical colleges now existing in the United States, 2,320, or 54.8 per cent., took their license examinations in the states in which the colleges from which they graduated were located. Of this number 14.6 per cent. failed on the average, whereas, of the 1,253 candidates examined in other states, 17.5 per cent. failed. This would indi-

TABLE H.—PHYSICIANS EXAMINED BY STATE BOARDS, 1910 TO 1914, INCLUSIVE

STATE	1910		1911		1912		1913		1914		Totals			
	Registered	Rejected	Registered	Rejected	Registered	Rejected	Registered	Rejected	Registered	Rejected	Examined	Registered	Rejected	Percentage Rejected
Alabama	94	64	107	54	84	72	90	57	115	60	797	490	307	38.5
Alaska	...	...	...	...	...	...	...	...	4	0	4	4	0	0.0
Arizona	15	9	28	0	32	10	26	9	26	16	180	127	53	29.4
Arkansas	96	28	108	30	124	27	91	28	97	16	645	516	129	20.0
California	204	47	227	59	256	60	163	36	113	45	1210	963	247	20.0
Colorado	48	5	33	8	41	1	53	5	31	1	226	206	20	8.8
Connecticut	69	18	73	20	70	18	77	51	46	8	450	335	115	25.6
Delaware	21	2	22	0	22	1	12	1	18	0	99	95	4	4.0
Dist. of Columbia	32	13	25	8	49	7	55	5	47	12	253	208	45	17.8
Florida	102	15	87	23	114	31	116	49	106	37	680	525	155	22.8
Georgia	148	9	148	28	178	17	171	24	179	21	923	824	99	10.7
Idaho	47	24	41	13	35	12	21	2	19	2	216	163	53	24.6
Illinois	631	100	432	154	505	134	567	98	484	110	3215	2619	596	18.5
Indiana	97	9	114	7	95	4	101	1	48	2	478	455	23	4.8
Iowa	113	4	75	6	131	7	107	4	77	1	525	503	22	4.2
Kansas	66	25	56	25	50	12	89	7	37	4	371	298	73	2.0
Kentucky	119	35	88	30	88	8	78	12	50	7	530	432	98	18.5
Louisiana	104	34	123	30	128	36	69	20	76	24	644	500	144	22.3
Maine	73	5	86	11	74	17	46	9	54	11	386	333	53	13.7
Maryland	131	32	160	39	160	40	108	40	105	27	848	664	184	21.7
Massachusetts	197	100	226	74	227	54	215	74	226	97	1490	1091	399	26.7
Michigan	131	3	127	1	159	3	99	3	138	2	666	654	12	1.8
Minnesota	76	22	58	7	55	5	71	4	47	3	348	307	41	11.8
Mississippi	84	150	115	113	56	48	61	19	51	17	714	367	347	48.6
Missouri	181	23	182	38	213	32	200	25	195	33	1122	971	151	13.5
Montana	73	24	44	19	50	9	57	16	58	25	375	282	93	24.8
Nebraska	80	0	67	11	88	10	87	2	66	6	417	388	29	7.0
Nevada	12	1	8	1	8	1	10	3	7	3	54	45	9	16.7
New Hampshire	34	8	18	5	36	7	17	3	36	6	170	141	29	17.1
New Jersey	63	17	107	15	59	14	69	7	41	13	405	339	66	16.3
New Mexico	6	1	2	2	6	2	6	1	8	2	36	28	8	22.2
New York	515	72	536	164	433	153	511	205	501	169	3259	2496	763	23.4
North Carolina	79	15	92	30	87	37	77	34	81	37	569	416	153	26.9
North Dakota	42	5	25	1	15	7	16	13	15	1	140	113	27	19.3
Ohio	172	10	170	8	199	12	189	3	146	18	927	876	51	5.5
Oklahoma	100	42	123	39	94	27	58	5	48	12	548	423	125	22.8
Oregon	93	55	94	50	96	65	112	36	76	42	719	471	248	34.5
Pennsylvania	451	52	515	27	356	170	345	59	101	22	2068	1768	330	15.7
Rhode Island	23	10	32	5	39	12	28	4	27	5	185	149	36	19.5
South Carolina	61	44	94	27	80	35	99	47	68	37	602	412	190	31.6
South Dakota	52	9	53	5	16	1	30	1	25	4	196	176	20	10.2
Tennessee	315	52	213	42	313	76	306	94	149	205	1765	1296	469	26.6
Texas	102	5	151	19	151	13	168	11	152	11	843	784	59	7.0
Utah	34	4	22	3	20	2	24	3	13	3	128	113	15	11.7
Vermont	21	1	51	1	45	2	24	2	28	0	175	169	6	3.4
Virginia	122	14	115	43	105	30	87	19	98	10	645	529	116	18.0
Washington	154	43	102	43	69	27	63	22	92	5	620	480	140	22.6
West Virginia	88	25	88	22	66	20	58	17	51	4	420	351	88	20.0
Wisconsin	71	7	107	7	68	19	98	8	81	4	470	425	45	9.6
Wyoming	10	0	8	0	11	0	10	1	4	0	44	43	1	2.3
Totals	7004		6960		6879		6435		5570		32848			
Registered	5712		5578		5466		5236		4370		26362			
Rejected	1292		1382		1413		1199		1200		6486			
Per Cent. Rejected	18.4		19.9		20.5		18.6		21.6		19.7			

This table gives the number of candidates registered and rejected on examination by each state during each of the last five years. The last four columns give the totals for the five years and the percentage rejected by each state.

Five states registered over 1,000 candidates by examination in the five years, these being Illinois, Massachusetts, New York, Pennsylvania and Tennessee. Over 2,000 were registered in only two states, Illinois and New York. Of the 1,296 candidates registered in Tennessee in the last five years, 591, or 45.6 per cent. were non-graduates.

The highest percentages of rejections were 48.6 in Mississippi, followed by Alabama, Oregon, South Carolina and Arkansas, with 38.5, 34.5, 31.6 and 29.4, respectively. Massachusetts, Oregon, Tennessee and (until 1912) Mississippi included non-graduates among those examined during the last five years, and for that reason would supposedly have higher percentages rejected. On the other hand, in several states the boards refuse to recognize certain colleges and eliminate many candidates prior to the examination by a careful scrutiny of credentials and as a result there are lower percentages of failures at the examinations.

Omitting Alaska, the lowest failure percentages were in Michigan, 1.8; Kansas, 2.0; Wyoming, 2.3; Vermont, 3.4; Delaware, 4.0; Iowa, 4.2, and Indiana, 4.8.

cate that, as a rule, the student's chances of passing the license examination are better if he takes the examination in the state in which the college is located. In this connection it is interesting to note that no graduate of any of the colleges in Connecticut, Vermont and Iowa failed in the examinations given in those states, although of the graduates of these colleges who were examined in other states, the failures of these groups of colleges were, respectively, 6.3, 10.3 and 25.0 per cent. There were no failures either at home or in other states for graduates of the colleges of Colorado, Indiana, Kansas, New Hampshire or Oklahoma. The student's chances for success at home and elsewhere were equal or nearly so in the groups of colleges of Maryland, Minnesota, North Carolina and Texas. The student's chances were better in the home state in seventeen instances, while in ten instances the student's chances were better if he took his license examination in some other state.

TABLE I.—REGISTRATION BY STATE BOARDS DURING THE YEAR 1914

STATES	By Examination			By Reciprocity	Without Written Examination or Under Exemption	Total Registered
	Graduates, 1910-1914	Graduates, 1909 and Previous	Non-graduates			
Alabama	101	14	....	....	....	115
Alaska	3	1	....	....	....	4
Arizona	10	16	....	....	....	26
Arkansas	75	22	....	35	....	132
California	99	14	....	395	....	508
Colorado	29	2	....	54	....	85
Connecticut	36	10	....	8	....	54
Delaware	18	....	....	4	....	22
District of Columbia	43	4	....	4	....	51
Florida	72	34	....	....	....	106
Georgia	174	5	....	21	....	200
Idaho	11	8	....	5	....	24
Illinois	457	27	....	53	....	537
Indiana	41	7	....	37	....	85
Iowa	71	6	....	20	....	97
Kansas	32	5	....	23	....	60
Kentucky	57	2	....	10	3	72
Louisiana	75	1	....	8	....	84
Maine	45	9	....	13	....	67
Maryland	101	4	....	25	....	130
Massachusetts	175	27	24	....	....	226
Michigan	130	8	....	76	....	214
Minnesota	43	4	....	40	....	87
Mississippi	47	4	....	6	....	57
Missouri	156	39	....	17	....	212
Montana	33	25	....	....	....	58
Nebraska	60	6	....	48	....	114
Nevada	1	6	....	13	....	20
New Hampshire	32	4	....	9	....	45
New Jersey	41	0	....	74	....	115
New Mexico	3	5	....	3	42	53
New York	473	28	....	23	1	525
North Carolina	78	3	....	26	....	107
North Dakota	12	3	....	13	....	28
Ohio	144	2	....	73	....	219
Oklahoma	40	8	....	61	....	109
Oregon	45	18	13	....	....	76
Pennsylvania	94	7	....	20	....	121
Rhode Island	20	7	....	....	....	27
South Carolina	66	2	....	....	....	68
South Dakota	16	9	....	7	....	32
Tennessee	65	8	76	2	....	151
Texas	119	33	....	1	....	153
Utah	8	5	....	9	....	22
Vermont	27	1	....	3	....	31
Virginia	80	9	....	35	....	133
Washington	56	36	....	....	....	92
West Virginia	48	3	....	39	....	90
Wisconsin	74	7	....	68	....	149
Wyoming	3	1	....	....	....	4
Totals	3748	509	113	1381	46	5797

This table shows the total number registered during 1914 in each state by the various methods. The first three columns show those registered by examination: the first column showing the recent graduates registered, the second column, the old practitioners (graduates of 1909 and previous years) and the third column, the non-graduates. The fourth column shows the number licensed through reciprocity, the fifth column shows those licensed under various exemption clauses in the practice acts, such as because of national fame or by recognition of diplomas (New Mexico).

It is interesting to note that as a rule states which have registered large numbers through reciprocity, Michigan for example, have examined very few old practitioners. The surprisingly large registration through reciprocity in California is due to the fact that registration under a practice act providing for the recognition of licenses granted in other states was begun only a year ago. There were no reciprocal registrations in eleven states, including Alaska.

The last column shows the total number of physicians registered by all methods in each state during the year. Only three states registered over 300 each, these being Illinois, 537; New York, 525; and California, 508. Eleven states registered less than 50 each, Alaska and Wyoming registering only 4 each.

Total Results for Five Years

Table H shows the number registered and the number rejected in each state for each of the past five years. A comparison of this table with the statistics in the last educational number of THE JOURNAL (Aug. 22, 1914, p. 687, table 14), shows what would be expected, that the states having the largest number of medical graduates, examined the largest number of physicians. Now, only one state, New Mexico, will register candidates on presentation of diplomas, without examination. This table shows only those registered by examination. The next table (I) shows the total registered by all methods.

Total Registration in 1914

The tables thus far described have referred only to the results of examinations and to those registered on that basis. Table I, however, shows the total number who received licenses in each state, including those registered by examination, by reciprocity and under various exemption clauses. Altogether 5,797 physicians were registered by all methods during 1914 as compared with 6,501 in 1913, 6,723 in 1912, 6,824 in 1911, 7,352 in 1910 and 7,865 in 1906. By reciprocity or under exemption clauses, 1,427 were licensed in 1914, as compared with 1,265 in 1913, 1,257 in 1912, and 1,246 in 1911. The last year, therefore, has shown a marked increase in the number registered through reciprocity, an increase of 162. Over 100 were registered by all methods in twenty-one states, over 200 in eight and over 300 in three, the largest numbers being registered in Illinois with 537, New York with 525, and California with 508. The results of the higher requirements for registration in Pennsylvania are shown by the fact that only 121 were registered in 1914, as compared with 366 in 1913. Tennessee also shows a reduction from 323 in 1913 to 151 in 1914. Of the 508 licensed in California, 395, or 77.8 per cent. were registered under the new practice act which provides for the endorsement of licenses granted by the boards of other states.

Table J gives those registered without examination on presentation of satisfactory credentials, which included a license issued by some other state. This is commonly referred to as "reciprocity," which conveys the idea that the state which accepts the license of another must be granted the same courtesy by the state issuing the original license. The term does not well describe this method of registration, however, since some state boards—Colorado and California, for example—accept the physician's credentials, if satisfactory, whether or not the state board issuing the original license returns the favor. Had not reciprocal relations been established by the 39 states shown in Table J, 1,381 physicians, many of whom have been in practice for ten or more years, would have been compelled to undergo the ordeal of a second trying examination.

Reciprocity and Educational Standards

As formerly administered, reciprocal relations tended to lower rather than to elevate educational standards, and this is still true in some states. A study of these statistics will show that in several instances such relations exist between states differing widely in their standards of education and in the methods and severity of their examinations. It can be seen, therefore, that a *loosely administered provision for reciprocity provides a wide-open door through which unqualified candidates can obtain registration.* There are some boards, however, which wisely reserve and and exercise the right to reject any candidate who does not possess satisfactory credentials even though he is licensed in a state with which it has reciprocal relations. Some boards also prudently require that the applicant, before he is eligible to registration through reciprocity, must have been engaged in the actual

TABLE J.—PHYSICIANS REGISTERED THROUGH RECIPROCITY BY STATE EXAMINING BOARDS DURING 1914

Number	....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
STATE BOARDS OF	Total Reg. by Recip., Ex. State	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Col.	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Army	Alaska, Hawaii, etc.	Foreign
Arkansas	35	..	..	..	3	..	..	..	..	..	3	..	4	4	..	..	5	3	..	..	..	..	..	3	..	..	..	..	..	..	1	..	..	..	1	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
California	395	1	14	3	..	16	1	..	3	..	..	5	80	12	24	15	..	1	3	7	2	18	7	..	25	4	13	7	..	2	2	33	..	2	15	2	2	20	1	..	2	4	2	2	2	5	18	..	13	1	3	1	2
Colorado	54	..	..	..	1	..	..	..	..	..	..	..	5	2	4	2	1	1	..	2	..	1	..	1	11	..	1	..	..	1	..	2	..	..	4	2	1	3	..	..	4	2	..	..	1	..	1	1	..	..	..	..
Connecticut	8	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Delaware	4	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Dist. of Columbia	4	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Georgia	21	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	5	..	..	..	..	1	..	2	..	..	..	..	..	1	..	8	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Idaho	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..
Illinois	53	..	..	1	..	..	..	..	..	..	..	..	..	3	..	4	5	..	..	4	..	2	..	..	17	..	2	..	..	2	..	..	..	..	4	..	..	1	..	..	..	1	..	..	1	..	..	5	1	..	..	..
Indiana	37	..	..	..	..	..	..	..	..	..	1	..	12	..	2	1	5	..	..	1	..	2	..	..	2	..	..	..	..	..	..	1	..	..	2	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Iowa	20	..	..	..	..	1	..	..	..	..	..	..	..	2	..	3	..	..	..	..	..	1	..	..	3	7	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..
Kansas	22	..	..	..	..	2	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	12	3	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Kentucky	10	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	2	..	..	..	1	..	..	1	..	..	2	..	..	..	..
Louisiana	8	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..
Maine	13	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	5	..	..	1	..	..	..	..
Maryland	25	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	5	..	..	..	..	2	..	1	4	..	5	..	..	..	..
Michigan	76	..	1	3	..	1	..	..	1	..	..	..	20	3	1	..	2	..	..	2	..	..	3	..	6	..	..	..	..	..	..	6	1	..	12	1	..	2	..	..	..	1	1	..	1	..	..	2	5	..	..	1	..
Minnesota	40	..	..	..	..	..	..	..	1	..	..	..	16	..	5	..	..	..	..	1	..	2	..	..	..	..	..	1	..	..	1	..	..	..	1	3	..	..	..	..	..	..	..	..	..	1	..	..	8	..	..	..	..
Mississippi	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	2	..	..	..	..	..	..	..
Missouri	17	..	..	..	..	..	..	..	..	..	..	..	3	1	..	5	4	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	1	..	..	1	1	..	..	..	..	..	1	1	..	..	..
Nebraska	48	..	..	1	..	3	..	..	1	..	1	..	8	1	8	5	1	..	..	..	..	1	1	..	8	..	..	2	..	..	..	..	..	..	2	..	..	1	..	..	1	1	..	..	..	..	..	2	..	..	..	..
Nevada	13	..	..	..	..	1	..	..	..	..	..	..	3	..	1	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
New Hampshire	9	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	1	..	..	..	..
New Jersey	74	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	3	..	..	..	1	..	..	..	1	..	..	..	1	..	41	..	..	..	..	..	20	..	..	..	..	..	..	5	1	..	..	..	..	..	..
New Mexico	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New York	23	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	6	..	..	5	..	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	..	..
North Carolina	26	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	1	..	1	3	..	..	..	2	..	..	..	..	..	..	2	..	..	1	..	..	..	2	..	1	..	..	..	7	..	2	..	..	..	..	1
North Dakota	13	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	5	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..
Ohio	73	..	..	..	..	..	..	..	1	..	..	..	10	5	2	1	2	..	..	2	..	14	..	..	2	..	1	..	..	1	..	5	..	1	..	..	..	16	..	..	..	..	..	1	1	..	8	1	..	..	..	..
Oklahoma	61	..	..	9	..	..	..	..	..	..	4	..	3	..	..	1	..	..	..	1	..	1	..	..	2	..	..	..	..	1	..	..	5	..	1	..	..	..	..	..	2	15	11	..	..	..	5	1	..	..	..	..
Pennsylvania	20	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	4	..	4	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..	1	4	..	..	..	..	..	..
South Dakota	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	..	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Texas	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Utah	2	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Vermont	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Virginia	35	..	..	..	1	..	..	..	7	1	2	..	..	..	..	..	..	1	..	..	3	1	..	..	..	..	..	..	..	..	..	4	3	..	1	1	..	3	..	..	..	2	1	..	..	..	4	..	..	..	..
West Virginia	39	..	..	..	..	..	..	..	3	1	1	..	2	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	1	..	..	5	..	..	5	..	..	..	7	..	..	6	..	..	..	..	..	..	..
Wisconsin	68	..	..	1	..	1	..	..	..	..	..	..	2	4	3	..	..	..	..	2	..	2	5	1	3	..	1	..	1	..	..	4	..	..	2	..	..	2	..	..	..	1	1	..	2	..	..	..	..	..	..
Totals	1381	1	15	30	2	26	1	2	23	2	17	5	204	44	52	42	35	10	10	44	7	69	24	10	98	4	38	9	3	19	9	103	7	5	71	22	3	88	1	2	5	42	23	8	21	41	18	33	41	3	3	2	3
Number	....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52

This table shows the number of physicians registered by each state through reciprocity during 1914. Reading from left to right, it shows the total number of physicians registered through reciprocity in the state named and the numbers of such candidates coming from the states named in the corresponding columns. Reading from above downward, the figures show the number of physicians who left the state named at the head of the column and went to each of the states named in the corresponding lines and, at the bottom, the total number of candidates leaving the state to go elsewhere. For example, reading from left to right, the table shows that South Dakota registered seven candidates through reciprocity in 1914 and that, of these candidates, one came from Kansas, two from Minnesota, three from Nebraska and one from North Dakota; reading from above downward, the table shows that from South Dakota two candidates went to California, one to Nebraska and two to Oklahoma, the total leaving the state to go elsewhere being five.

The line at the bottom shows in what states physicians who were registered through reciprocity obtained their original licenses. From Illinois 204 candidates obtained their original licenses, followed by New York with 103, Missouri with 98, Pennsylvania with 88 and Ohio with 71.

TABLE K.—RECIPROCAL REGISTRATION IN FIVE YEARS (SHOWING WHAT STATES ISSUED THE ORIGINAL LICENSES)

STATE	Physicians Going from States Named During					Totals
	1910	1911	1912	1913	1914	
Alabama	....	3	1	2	1	7
Arizona	....	....	....	3	15	18
Arkansas	52	11	15	37	20	135
California	2	1	....	....	2	5
Colorado	13	16	9	12	26	76
Connecticut	....	....	1	2	1	4
Delaware	6	9	15	8	2	40
District of Columbia	11	23	18	17	23	92
Florida	1	....	1	1	2	5
Georgia	14	7	13	26	17	77
Idaho	....	....	5	....	5	10
Illinois	286	236	193	171	204	1090
Indiana	50	37	40	33	44	204
Iowa	84	63	58	36	52	293
Kansas	63	50	27	32	42	214
Kentucky	74	42	36	43	35	230
Louisiana	9	8	10	13	10	50
Maine	15	14	23	9	10	71
Maryland	41	52	48	42	44	227
Massachusetts	....	2	2	2	7	13
Michigan	51	69	59	66	60	305
Minnesota	31	29	29	29	24	142
Mississippi	1	3	5	15	10	34
Missouri	91	59	67	61	98	376
Montana	3	....	1	....	4	8
Nebraska	42	46	29	34	38	189
Nevada	3	2	3	4	9	21
New Hampshire	1	6	1	7	3	18
New Jersey	16	14	18	10	19	77
New Mexico	1	1	4	8	9	23
New York	224	42	46	70	103	485
North Carolina	7	16	12	14	7	56
North Dakota	8	7	12	6	5	38
Ohio	45	40	39	50	71	245
Oklahoma	21	3	28	74	22	148
Oregon	....	....	....	3	3	6
Pennsylvania	21	12	57	86	88	264
Rhode Island	....	....	....	....	1	1
South Carolina	5	4	5	3	2	19
South Dakota	....	2	1	10	5	18
Tennessee	45	28	51	39	42	205
Texas	23	10	24	19	23	99
Utah	1	2	3	12	8	26
Vermont	27	36	30	11	21	125
Virginia	31	28	25	26	41	151
Washington	2	7	3	2	18	32
West Virginia	45	45	29	41	33	193
Wisconsin	31	41	35	28	41	176
Wyoming	1	2	4	4	3	14
Alaska, Hawaii, etc.	....	....	1	1	2	4
U. S. Army	....	....	2	1	3	6
U. S. P. H. Service	2	....	....	....	....	2
Canada	2	....	....	....	1	3
Foreign and Misc.	....	....	3	....	2	5
Totals	1502	1128	1141	1223	1381	6375

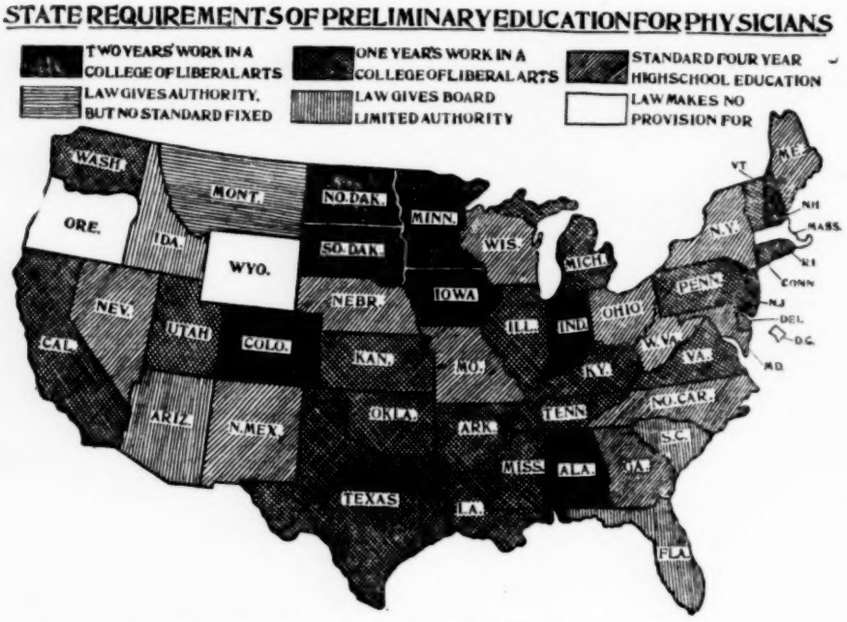
This table shows that 6,375 candidates were registered through reciprocity during the last five years. Registration by reciprocity has been gradually increased since 1911. A study of the totals for the different states shows that of the 6,375 registered during the four years 1,090, or 17.1 per cent., obtained their original licenses in Illinois. This is more than twice the number coming from any other state. The states furnishing the next highest numbers are New York, 485, Missouri, 376, and Michigan, 305.

Ten states—Alabama, Arizona, Florida, Massachusetts, Montana, Oregon, Rhode Island, South Carolina, Washington and Wyoming—do not have reciprocal relations and would not appear in this table except for the fact that some states, like California, Colorado and New Jersey, will accept a physician's credentials if satisfactory, whether the state issuing his original license returns the favor or not.

and reputable practice of his profession for at least a year in the state in which the original license was granted. Without this provision a candidate would be tempted to obtain his original license in the state giving the easiest examination. Without the one-year residence clause, therefore, standards of examination are apt to be lowered.

Again, some states wisely refuse to register by reciprocity any candidates who have failed to pass their own examination, but this rule is not generally observed. In the establishing of reciprocal relations, therefore, the state board should reserve and exercise the discretionary power to *refuse to register any candidate who could not originally have registered in that state,* and, secondly, the board should require that the applicant shall have been in actual practice of medicine for at least a year before he is eligible to registration under the reciprocity provision.

In the light of the foregoing statement in regard to reciprocity, it will be interesting to study Table K, which shows in what states the original licenses were granted of those who were registered elsewhere under the reciprocity provision during the last five years. It should be noted that of the 6,375 physicians licensed through reciprocity during the last five years, the original licenses of 1,090 (17.1 per cent.) were obtained in Illinois, more than twice as many as came from any other state. In New York 485 physicians took their original license examinations, 376 in Missouri, 305 in Michigan and 293 in Iowa.



The accompanying chart shows the standards of preliminary education for each state. There are 9 states, Alabama, Colorado, Iowa, Indiana, Minnesota, New Hampshire, New Jersey, North Dakota and South Dakota, in which the standard is two years of collegiate work; in 18 states the standard is one year of college work; and in 13 states the standard is a four-year high-school education. There are 5 states in which the law seriously divides the authority between independent boards, or where the standard is less than a four-year high-school education, while in 3 states,* Massachusetts, Wyoming and the District of Columbia, the practice acts make no provision for preliminary education. Table L shows the states in which the boards have adopted the requirement of one or two years of collegiate work as a minimum. Table M shows the progress made in the requirements by state licensing boards since 1904.

TABLE L.—STATE REQUIREMENTS OF HIGHER PRELIMINARY EDUCATION

There are now twenty-seven states which have adopted requirements of preliminary education in addition to a standard four-year high-school education. These states, the number of college years required and the time the higher requirement becomes effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Applicants
Requiring two years—			
Alabama	2	1915-16	1919
Colorado	2	1910-11	1914
Indiana	2	1910-11	1914
Iowa	2	1911-12	1915
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
North Dakota	2	1908-09	1912
South Dakota	2	1911-12	1915
Requiring one year—			
Arkansas	1	1915-16	1919
California	1	1915-16	1919
Connecticut	1	1910-11	1914
Illinois	1	1915-16	1919
Kansas	1	1910-11	1914
Kentucky	1	1914-15	1918
Louisiana	1	1915-16	1919
Michigan	1	1914-15	1918
Mississippi	1	1915-16	1919
New Jersey	1	1916-17	1920
Oklahoma	1	1914-15	1918
Pennsylvania	1	1914-15	1918
Rhode Island	1	1914-15	1918
Tennessee	1	1915-16	1919
Texas	1	1914-15	1918
Utah	1	1910-11	1914
Vermont	1	1912-13	1916
Virginia	1	1914-15	1918
Washington	1	1914-15	1918

IN CONCLUSION

In the gathering and publication of these statistics the endeavor has been to give an absolutely fair presentation of facts, a knowledge of which is always beneficial. Without question this annual presentation of the results of state licensing examinations has had a most helpful influence on medical education and medical licensure in this country. We reiterate our acknowledgments to the state licensing boards whose ready cooperation and complete reports have made the publication of these data possible.

* It is understood an amendment has been secured in Oregon providing for preliminary education.

TABLE M.—ADVANCES IN STATE LICENSE REQUIREMENTS IN TEN YEARS

Requirement or provision	States having provision for			States still having no provision for
	1904	1915	Increase	
Preliminary Education—				
Any requirement	20	46	26	3
A standard four-year high school education or higher	10	39	29	10
One or two years of college work as a minimum	0	27	27	22
That all applicants be graduates of a medical college	36	47	11	2
That all applicants undergo an examination for license	45	48	3	1
Requirement of practical tests in the license examinations	1	7	6	42
Full authority by board to refuse recognition to low-grade colleges	14	33	19	16
Boards refusing to recognize low-grade colleges	5	32	27	17
Reciprocal relations with other states	27	39	12	10
Single boards of medical examiners	36	41	5	8

MINIMUM REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOLS

During the February conference on medical education, a joint committee of the Association of American Medical Colleges and of the Council on Medical Education, represented respectively by Drs. F. C. Waite and N. P. Colwell, assisted by Dr. Kendric C. Babcock, dean of the College of Liberal Arts and Sciences of the University of Illinois, formerly Specialist in Higher Education in the United States Bureau of Education, was appointed to prepare a statement in greater detail in regard to the requirements of admission to medical colleges to be enforced during the next few years, including a statement of such conditions as may be allowed for the next two years. This committee met in Chicago on Thursday, Feb. 18, 1915, and prepared a preliminary statement which was submitted to fifty or more leading authorities on preliminary education for their suggestions and criticisms. Following the receipt of the replies, the committee held another meeting, April 10, 1915, and the following is the statement as revised:

I. HIGH SCHOOL REQUIREMENTS

(a) For admission to the preliminary college year, students must have completed a four-year course of at least fourteen units in a standard accredited high school or other institution of standard secondary school grade, or have its equivalent as demonstrated by an examination conducted by a duly authorized examiner of the College Entrance Examination Board, or by the authorized examiner of a standard college or university which has been approved by the Council on Medical Education, or by an examiner whose certificates are accepted by such approved standard colleges or universities. A detailed statement of attendance at the secondary school, and a transcript of the student's work should be kept on file by the medical school authorities. This evidence of actual attendance at the secondary school or schools should be obtained for every student no matter whether he is admitted to the freshman or to advanced classes. This information regarding high school education should be kept separate from the transcript of college work described below.

(b) The subjects for which credits for admission to the preliminary college year may be accepted are shown in the accompanying schedule.

II. WORK OF THE PRELIMINARY COLLEGE YEAR

(c) The preliminary college year, which is the present minimum requirement for admission to medical schools, shall extend through one college session of at least thirty-two weeks of actual instruction, including final examinations. Its purpose is to provide the student with a training that will enable him to enter more intelligently on the study of the fundamental medical sciences.

(d) In excellence of teaching and in content, the work of this preliminary college year shall be at least equal to the work done in the freshman year in standard colleges and universities which enforce for admission at least fourteen units of accredited high school work, and exact for graduation at least 120 semester hours[1] of collegiate work.

(e) This preliminary college year shall consist of at least thirty semester hours,[1] fully completed before the student enters the medical school. This is entirely in addition to the fourteen units of secondary school work. Each student before being admitted to the medical school must have fully completed fourteen (14) units of high school work and at least thirty (30) semester hours of college work. If the college work did not include the specified subjects, as shown in (f), the students must be required to remove such conditions as are permitted in those subjects by *additional* college work. Additional college credits are necessary also, to make up any deficiencies there may be in high school credits. For example, if a student completed only three years of high school work before entering "college," then two years of collegiate work (60 semester hours) must be required before he is admitted to the medical school.

(f) This preliminary college year shall include courses in physics, chemistry and biology, each course to embrace at least eight semester hours of didactic and laboratory work as shown in the accompanying schedule, provided that the requirement in biology may be satisfied by presenting six semester hours of college zoology, or by presenting one unit of high school biology, including laboratory work, and completing four semester hours of college zoology; and provided that the requirement in physics may be satisfied by presenting one unit of high school physics, including laboratory work, and completing four semester hours of college physics which continues and does not duplicate the work done in high school. Under no arrangement, however, should there be a total of less than thirty semester hours of college work. It is strongly urged that these include six semester hours of a modern language other than English, preferably French or German.[2]

SCHEDULE OF SUBJECTS OFFERED IN ACADEMIC AND SECONDARY SCHOOLS, CREDITS IN WHICH ARE ACCEPTABLE FOR ENTRANCE TO THE PRELIMINARY COLLEGE YEAR LEADING TO THE MEDICAL COURSES

SUBJECTS	UNITS	REQUIRED	ELECTIVE
ENGLISH			
Reading and Practice	2	2	...
Study and Practice	1	...	1
MATHEMATICS			
Algebra to Quadratics	1	1	...
Algebra (Quadratic Equations, Binomial Theorem and Progressions)	½	...	½
Plane Geometry	1	1	...
Solid Geometry	½	...	½
Trigonometry	½	...	½
LATIN			
Grammar and Composition	1	*	1
Caesar	1	*	1
Cicero	1	...	1
Virgil	1	...	1
Cornelius Nepos	1	...	1
Greek			
Grammar and Composition	1	*	1
Xenophon	1	*	1
Homer	1	...	1
German (or French)			
Elementary	2	2*	...
Intermediate	1	...	1*
Spanish			
Elementary	2	...	2
Scandinavian			
Elementary	2	...	2
HISTORY			
American History and Civil Government	1	1	...
Greek and Roman History	1	...	1
Medieval and Modern History	1	...	1
English History	1	...	1
Science †			
Botany and Zoology, each	1	...	1
or Biology	1	...	1
Chemistry	1	...	1
Physics	1	...	1
Physiography	½	...	½
Physiology	½	...	½
Agriculture	1	...	1
Drawing	1	...	1
Manual Training	1	...	1
Domestic Science	1	...	1
Music			
Appreciation or Harmony	1	...	1
Total	35½	7	28½

A *unit* is the credit value of at least 36 weeks' work of 4 or 5 recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

Required Branches: Of the 14 units of high-school work it is suggested that the subjects in capitals aggregating 7 units be required. Other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

* Two units of Greek or Latin may be substituted for the two required units of French or German.

† Credentials of each science course must include evidence of laboratory work.

1. A semester hour is the measurement of work represented by one class period per week for half of the college year. Each laboratory period to be so valuated must extend over at least two hours.

2. The inclusion of French or German is required for entrance to institutions which are members of the Association of American Medical Colleges.

(g) Credits for two or more years of collegiate work cannot be considered *fully* acceptable unless courses in physics, chemistry and biology, as described above, have been completed. It is urged that a reading knowledge of French or German also be required.

SCHEDULE

Subject	Lectures or Recitations Per Week	Laboratory Periods† Per Week	Total Hours Per Semester	Total Semester Hours Per Year
Physics, 1....	2 or 3	2 or 1	4	8
Chemistry, 1..	2	2	4	8
Biology, 1....	2 or 3	2 or 1	4	8
(or Zoology, 1)*	(1)	(2)	(3)	(6)
Elective, preferably French or German, 2*.	4 or 3	.....	4 or 3	8 or 6
Totals.....	9 or 11	6 or 5	16 or 15	32 or 30

* See paragraph (*f*).

† Each laboratory period must extend over at least two hours.

(h) Medical schools which aim to give a premedical year, including these science courses, should admit only those students who have completed at least fourteen units of unconditioned high school work,[3] should provide expert full-time teachers in the various subjects in addition to the regular staff of the medical school; should provide standard laboratory equipment; and should provide a training in the subjects of the premedical year no less thorough than that given in standard colleges of liberal arts and the total work of this premedical year should amount to at least thirty semester hours of non-medical subjects.

(i) Postgraduate courses given in high schools cannot be considered equal to college courses given by college teachers, unless such postgraduate courses are definitely organized on a junior college basis, and credits for work done in them regularly recognized and accepted by a state university or other university of similar rank, approved by the Council.

(j) A year of work in a college of medicine, dentistry, pharmacy, or other professional college is not considered as an equivalent to the required premedical college year.

III. ENTRANCE CONDITIONS UNTIL JAN. 1, 1917[4]

(k) A student may be admitted with certain subject conditions provided he has completed at least one year [thirty semester hours, see paragraph (e)] of work in an approved college of liberal arts or science, provided no conditions may be permitted in the prescribed eight semester hours of college chemistry. These conditions may be either in (1) or (2), but not in both: (1) In one-half (four semester hours) of the required course in physics, or, (2) in one-half of the required course in biology (four semester hours), or in zoology (three semester hours). These conditions must be removed before the beginning of the work of the second medical year and the credits for these conditions must be in addition to the required thirty semester hours.

(l) A candidate who has completed two or more years of work in an approved college of liberal arts, or science, may be admitted conditioned in all of the required work in physics, or one-half of the work required in biology, to a total not to exceed eight semester hours. These conditions must be removed before the beginning of the second medical year. No condition may be permitted in the prescribed eight semester hours of college chemistry.

(m) A candidate who holds a baccalaureate degree from a standard four year college or university approved by the Council on Medical Education may be admitted, in the fall of 1915 only, conditioned in all the physics or all the biology or in one-half of the physics and one-half of the biology, the total condition not to exceed eight semester hours. After 1915 only one-half of the biology (four semester hours) and one-half of the physics, or in all of the physics, the total not to exceed eight semester hours, may be carried as a condition. These conditions must be removed before the beginning of the second medical year. No condition may be permitted in the prescribed semester hours of college chemistry.

(n) Since the medical course demands the full energy of the student, especially in the freshman year, all deficiencies should be removed, so far as possible, during the summers preceding and following the freshman medical year.

(o) A medical school having students who were conditioned on entrance in 1914-15, under the former regulations, are entitled to have the conditions of such students brought into conformity with the rulings here announced without prejudice to its standing.

3. Part courses or uncompleted courses are not to be accepted.

4. Deficiencies in preparation may be made up in large part in attendance at a summer session of the university, either before or following the freshman medical year.

TABLE X.—ESSENTIAL FEATURES OF STATE LAWS AND CONDITIONS SURROUNDING MEDICAL LICENSURE

State	Graduation Required	Preliminary Education: Law Provides For	Preliminary Education: Years in High School Required	Preliminary Education: Years in a College of Arts‡	Medical Education: Required Years of Medical Study	Medical Education: Minimum Weeks per year	Medical Education: Required Months per year	Medical Education: Minimum Total Hours of Course	Medical Education: Intern Year Required	Has Reciprocity with Other States	Single Board of Examiners	Examination Fee (Dollars)	Reciprocal Fee (Dollars)
Alabama	....	Yes	4	2	4	....	....	....	....	No	....	10	....
Alaska	....	Yes	4	....	4	32	8	3600	....	No	....	25	....
Arizona	....	Yes	4	....	4	....	....	....	....	No	....	25	....
Arkansas	....	Yes	4	1	4	....	....	....	....	....	No	15	25
California	....	Yes	4	1	4	32	8	4800	....	....	....	25	50
Canal Zone	....	....	....	....	....	....	....	....	....	No	....	5	....
Colorado	No	Yes	4	2	4	....	9	3600	....	....	....	25	25
Connecticut	....	Yes	4	1	4	26	6½	3744	....	....	No	15	15
Delaware	....	Yes	4	....	4	....	7	....	....	....	No	10	50
Dist. of Col.	....	No	....	....	....	....	....	....	....	....	No	10	10
Florida	....	....	....	....	....	....	....	....	....	No	No	15	....
Georgia	....	Yes	4	....	4	32	8	5120	....	....	....	20	50
Hawaii	....	....	....	....	....	....	....	....	....	....	....	10	....
Idaho	....	Yes	....	....	....	....	....	....	....	....	....	25	25†
Illinois	....	Yes	4	1	4	30	7½	3200	....	....	....	10	10†
Indiana	....	Yes	4	2	4	30	7½	3000	....	....	....	25	50
Iowa	....	Yes	4	2	4	26	7	4180	....	....	....	10	50
Kansas	....	Yes	4	1	4	....	6	....	....	....	....	15	15†
Kentucky	....	Yes	4	1	4	30	7½	....	....	....	....	10	10
Louisiana	....	Yes	4	1	4	....	....	....	....	....	No	25	50
Maine	....	Yes	4	....	4	....	....	....	....	....	....	15	15
Maryland	....	Yes	4	....	4	....	....	....	....	....	No	15	25
Massachusetts	No	No	....	....	....	....	....	....	....	No	....	20	....
Michigan	....	Yes	4	1	4	34½	8½	3600	....	....	....	25	50
Minnesota	....	Yes	4	2	4	26	6½	....	....	....	....	10	50
Mississippi	....	Yes	4	1	4	....	....	....	....	....	....	10	50
Missouri	....	Yes	....	....	4	....	7	....	....	....	....	15	25
Montana	....	....	....	....	4	....	6	....	....	No	....	25	....
Nebraska	....	Yes	4	....	4	....	6	....	....	....	....	25	25
Nevada	....	Yes	4	....	4	....	....	....	....	....	....	25	25
New Hampshire	....	Yes	4	2	4	....	9	....	....	....	....	10	5
New Jersey	....	Yes	4	2	4	....	7	....	Yes	....	....	25	50
New Mexico	*	Yes	4	....	4	30	7½	3600	....	No	....	25	25
New York	....	Yes	4	....	4	....	7	....	....	....	....	25	25
North Carolina	....	Yes	4	....	4	....	....	....	....	....	....	15	50
North Dakota	....	Yes	4	2	4	30	8	3600	....	....	....	25	25
Ohio	....	Yes	4	....	4	30	....	....	....	....	....	25	50
Oklahoma	....	Yes	4	1	4	....	....	....	....	....	....	15	25
Oregon	....	Yes	4	....	4	....	....	....	....	No	....	10	....
Pennsylvania	....	Yes	4	1	4	32	....	4180	Yes	....	....	25	50
Philippine Is.	....	Yes	4	....	....	....	....	....	....	No	....	15	....
Porto Rico	....	Yes	4	....	4	....	....	....	....	No	....	10	....
Rhode Island	....	Yes	4	1	4	....	....	....	....	No	....	20	....
South Carolina	....	Yes	....	....	4	....	....	....	....	....	....	10	10
South Dakota	....	Yes	4	2	4	26	6½	....	....	....	....	20	20
Tennessee	....	Yes	4	1	4	....	....	....	....	....	....	10	10
Texas	....	Yes	4	1	4	....	....	3600	....	....	....	15	20
Utah	....	Yes	4	1	4	....	....	....	....	....	....	25	75
Vermont	....	Yes	4	1	4	....	....	3600	....	....	....	20	50
Virginia	....	Yes	4	1	4	....	....	....	....	....	....	25	25
Washington	....	Yes	4	1	4	....	....	....	....	No	....	25	....
West Virginia	....	Yes	4	....	4	....	....	....	....	....	....	10	10
Wisconsin	....	Yes	4	....	4	....	7	....	....	....	....	20	25
Wyoming	....	....	....	....	....	....	....	....	....	....	....	25	25

* Will accept a diploma without examination if from a recognized college.

† Reciprocal fee is the same as that charged by the state from which applicant comes.

‡ Or its equivalent in the medical college.

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SATURDAY, APRIL 24, 1915

STATISTICS OF STATE BOARD EXAMINATIONS

We publish this week, for the twelfth consecutive year, tabulated statistics based on official reports of examinations conducted by state medical licensing boards. For the last two years, however, other information having a direct bearing on state boards and methods of registration has been included. For example, Table D, which shows in what states certain colleges are not recognized, although not based on reports of examinations, is based on official statements, and has a most important bearing on the statistics published. The figures have all been carefully verified, and reliance may be placed on the facts presented. Reports were received from all state boards this year, and the statistics are complete. This is in marked contrast with the statistics of 1903, when the publication of these data began. At that time, reports from a large number of boards could not be secured for the reason that no permanent records of the examinations had been kept.

IMPORTANCE OF THESE STATISTICS

The casual reader glancing over the tables will probably not appreciate the conditions which make the publication of these data so important. Medical education and medical licensure in this country are controlled by the fifty individual states (including Alaska), each of which in these matters is legally independent of the others. In the fifty states there are fifty different practice acts, providing for about sixty different licensing boards, no two of which entirely agree in the details of the methods followed or the standards enforced. No legal provision exists in this country for a national control in these matters, for a coordination of standards or for a cooperation between the different boards. The lack of a national control, the lack of uniformity of standards and the lack of equal effectiveness of methods are very serious matters. In some states the public is well protected against illiterate and incompetent doctors, while in other states, because of poor laws or political boards, the right to practice medicine is easily secured by any person, no matter how incompetent he may be. If a doctor has had his license revoked in one state for malpractice or other reasons, he promptly goes to another state, often merely crossing a state line, where he seldom fails to secure a license. If he is caught again, he as promptly transfers his allegiance to a third state. To correct these serious conditions, a greater uniformity of standards and effectiveness of methods is highly essential among state boards. Toward that end the American Medical Association has been working since 1903 in voluntarily collecting and publishing information such as appears this week. If there were a national control of the licensing of physicians in the United States, such as exists in practically every other country, it would not be necessary for the American Medical Association to do this work.

The statistics deserve careful attention. A few additional comments are worth while, however, and the reader is urged to make a further study by referring to the tables and the descriptive matter accompanying them.

FACTS REGARDING EACH STATE

These tables give valuable information regarding medical licensure in each state. For example, Tables A and B show the number of candidates who appeared for examination, the colleges from which they graduated, the number from each college who passed and the number from each who failed, the total number registered, the total number rejected and the percentage of candidates rejected. This table allows of comparison between the totals and the percentages of one state and those of other states. If a state board's examinations are unusually lenient for graduates of medical schools located in that state as compared with the results for the same colleges in other states, the fact is shown in Table G.

Furthermore, if a state harbors a low-grade medical college, these figures show that that state is itself the recipient of the greater portion of the ill-trained output of that school. To decide whether or not a low percentage of rejections means "leniency," the reader should note in Table D whether the board has *refused to examine* graduates of low-grade colleges. If the board examines the graduates of only high-grade colleges, a low failure percentage is to be expected. If, on the other hand, a board admits graduates of any and all schools, or perhaps also nongraduates, an unusually high failure percentage would be expected. If in the latter circumstances there is still a low failure percentage, then "leniency" is perhaps too mild a term.

The total number of candidates examined, registered and rejected in the last five years by each board and the percentage of rejections are shown in Table H. This permits comparison not only of the figures of the last year with those of the four previous years, but also of the figures of one state with those of the others. Table I shows for each state the totals regis-

tered by all methods, by examination, by reciprocity and under exemption clauses. This table also shows the number of nongraduates licensed. Table J gives the number of candidates licensed by each state through reciprocity, and indicates in what states the original licenses were granted. Table K shows the total number of physicians who left each state during the last five years and secured licenses elsewhere through reciprocity. Table L gives the twenty-seven states which have adopted higher standards of preliminary education and the dates when the higher requirements are effective. The preliminary standards of all states are shown in the chart. Table M shows the progress in state board requirements during the last ten years. On the whole, these statistics call attention to the kind of protection the people of each state have against incompetent or ill-trained physicians.

FACTS REGARDING EACH COLLEGE

The tables also give much information regarding medical colleges. For example, Tables A and B show in what states graduates of each college were examined; they show the number who passed and the number who failed in each state, the total examined in all states, the number who passed, the number who failed, the percentage of failures and the number of states in which graduates of the college were admitted to examinations. In fact, Tables A, B and C permit a comparative study of medical colleges of much value in connection with any investigation of medical colleges. Table E shows for the group of colleges located in each state the total number of graduates examined in all states, the percentage of failures and the rank of each group according (*a*) to the number examined and (*b*) to the success of the graduates at the examinations. Table F furnishes an interesting study of the larger colleges—those having fifty or more graduates examined during the year—and allows of comparison between colleges of nearly equal size. The mere fact that a college has large classes is no indication that it furnishes a better medical training. In fact, the data in Table F show that often the contrary is true.

Before a conclusion is formed regarding any college, it is highly important to note in Table D whether or not its graduates are refused examination in any states. A low-grade college may occasionally have a very low percentage of failures by having all its graduates appear before a lenient board. The examination results taken alone in such an instance would seem to indicate good teaching methods. Such an erroneous conclusion is prevented, however, if it is found, as shown in Table D, that the college ranks low in the classification of the Council on Medical Education and that its graduates are not admitted to examination in from ten to thirty-two states. A fairly good college may occasionally have a high percentage of failures, especially if they are in states having more rigid examinations. It is seldom, however, that a well-equipped and well-conducted medical college will, year after year, receive as high as 15 or 20 per cent. of failures of its graduates at state licensing examinations. These statistics regarding colleges are very interesting, and throw an important side-light on the facts regarding medical colleges published in August each year in the Educational Number of The Journal.

TOTAL REGISTRATION IN ALL STATES

These statistics show for each state the number of candidates coming not only from each medical school in this country, but also from Canadian and other foreign medical colleges. In short, they give an accurate record of the number and source of those who are entering the practice of medicine each year in this country. Without the data published this week, it could not be known that 5,797 physicians were licensed in this country during 1914, and that the total number licensed had been falling off each year since 1906—a reduction, meanwhile, that is the expected reaction to an inflated oversupply of medical graduates, and the natural result of the improved safeguards which have been established to protect the public against ignorant and unsafe doctors.

STATISTICS ACCURATE AND RELIABLE

The work of collecting and publishing these statistics was begun by The Journal in 1903; but since the Council on Medical Education began active work in 1905, they have been developed as an important part of the Council's work. Every report received from the state licensing boards is now carefully checked, duplications are avoided, errors are corrected and the statistics are thereby rendered accurate and reliable. This is made possible through the enormous amount of data collected by the Council regarding medical colleges, students and graduates. Through the possession by the Council of complete alumni lists of all existing medical colleges, the Council is in position to avoid charging a college with a failure which may have been erroneously accredited to it when, in fact, the candidate who failed was a graduate of some other college.

INFLUENCE ON MEDICAL LICENSURE

These statistics have had a much greater effect, however, than that rendered by a mere numerical record of physicians examined and licensed, and probably no one has recognized their value more than the state licensing boards themselves. As a result, in many states splendid systems of record-keeping are now to be found where formerly, in several states at least, no records whatever were kept, and in several other states the systems were far from perfect. During the last several years, furthermore, they have furnished abundant argument for practical tests in state license examinations and have undoubtedly had much to do with the improved character of these examinations

and the better methods of conducting them. A study of the statistics for several years will show that, although there has been a gradual improvement, there is still much that needs to be done.

INFLUENCE ON MEDICAL COLLEGES

The influence on medical colleges resulting from the publication of these statistics has been tremendous. Whereas previously these institutions may have been unaware of the weakness in their methods of teaching, these statistics have shown them how frequently their graduates fail at the state license examinations. There has been marked improvement in their equipment, better teachers have been secured and better methods adopted, and it can be seen by a review of the statistics published during the last several years that a number of colleges have materially reduced the failure percentages of their graduates at these examinations.

COOPERATION MUTUALLY ADVANTAGEOUS

As will be understood by the careful reader, these statistics have their greatest value when studied in connection with other data collected by the Council on Medical Education and published in THE JOURNAL and in the Council's reports. The state board statistics are made more accurate and reliable through the data kindly furnished by medical colleges; they are based on reports received direct from state boards; but through the careful checking of those reports, errors are frequently corrected, the state boards are notified and in this way state records are also made more accurate. The statistics published this week, therefore, have been made possible only through the cordial cooperation of both the state boards and the medical colleges, and for this cooperation we again express our acknowledgments.

THE METABOLISM OF VEGETARIANS

The vegetarian propaganda, heretofore based in many instances on moral, religious or sentimental grounds, has of late turned to the science of nutrition for a justification of its claims. There has been a frank attempt on the part of the advocates to abandon sectarian and fanatical views and to seek recognition in the outcome of experimental researches for the vegetarian regimen both as a rational dietary and as a curative agency. The extremes of definition are being abandoned. In the words of a recent advocate, for all intents and purposes a vegetarian is one who does not habitually make use of flesh foods, in contradistinction to the habitual user.[1] Vegetarianism now frankly aims to emerge from a sentimental idea into a scientific truth. "It is in the name of science," Buttner[1] writes, "that we advocate it. It is also science that will rescue it from the exaggerations of well meaning but not altogether rational persons. We do not believe that a vegetarian diet is good whatever may be its composition, and we would reserve our right to judge any fad with proper scientific scrutiny. To instinctive feeding, we need to oppose, nowadays, rational feeding."

When advocates of a system of living are willing to submit their claims to the test of scientific experiment, a reasonable ground for discussion is afforded. The debate becomes one that involves facts and records—results that can be duplicated at will, rather than unmeasurable prejudices and counterclaims. It is frequently asserted that a vegetarian regimen may bring about exceptional endurance and capacity for work. Closely coupled with this at times has been the belief that vegetarians live on a somewhat lower metabolic plane than do flesh eaters who, it is asserted, are unduly stimulated by the protein of their food. It is doubtless true that the vegetarian custom leads to habits of abstemiousness in diet from which even beneficial results may accrue to the individual. This is not equivalent, however, to saying that the fundamental features of metabolism are changed in the vegetarian—that he works at the expense of less energy or in a fashion that is mysteriously economical from the standpoint of the exchange of matter in the body.

There are recognized ways of measuring accurately the metabolism of individuals and of securing defensible comparisons of their energy balance.[2] The measure of the basal gaseous metabolism, which may be considered as the carbon dioxid production and oxygen consumption during complete muscular repose and in the postabsorptive condition, that is, at least twelve hours after the last meal, gives an admirable index of the metabolic activity. Using the resources of the Nutrition Laboratory of the Carnegie Institution of Washington and the Battle Creek Sanitarium, Benedict and Roth[3] have made observations on the basal gaseous metabolism of both men and women who had subsisted on a vegetarian diet for a considerable period of time, extending, on the average, over several years. The results indicate that the gaseous metabolic processes of the vegetarians are qualitatively and quantitatively essentially like those of nonvegetarians of similar height and weight with whom they are compared. Thus a comparison of the heat production per twenty-four hours as computed from the gaseous exchange showed that the men vegetarians produced 25.5 calories per kilogram and the nonvegetarian men of like height and weight 26.4 calories. On the commonly used, yet questionable, basis of the heat per square meter of body surface per twenty-four hours, the vegetarians showed 798 calories as compared with 828 calories for the nonvegetarians. With the women the correspond-

1. Buttner, J. L.: A Fleshless Diet: Vegetarianism as a Rational Dietary, New York, F. A. Stokes Company, 1910.

2. Newer Aspects of Metabolism, editorial, THE JOURNAL A. M. A., April 17, 1915, p. 1326.

3. Benedict, F. G., and Roth, P.: The Basal Caloric Output of Vegetarians as Compared with that of Non-Vegetarians of Like Weight and Height, Proc. Nat. Acad. Sc., 1915, i, 100.

ing values per kilogram of body weight were 24.6 calories for the vegetarians and 25.0 calories for the nonvegetarians; and per square meter of body surface 753 calories for the vegetarians compared with 766 calories for the nonvegetarians.

Believing that the relatively large proportion of carbohydrate supposedly eaten in the vegetarian diets might tend to a larger storage of body glycogen, thus giving available carbohydrate material to be drawn on in the endurance and similar tests of muscular efficiency, a computation was made in all cases of the respiratory quotient, that is, the relationship between the carbon dioxid production and oxygen consumption. When the catabolism is exclusively from carbohydrate, this quotient is 1.0; with pure fat it is 0.70. For the twenty-two vegetarians (eleven men and eleven women) the average quotient was found to be 0.83, while the average for the 132 nonvegetarians (seventy-seven men and fifty-five women) was 0.81. The mathematical difference between these average respiratory quotients is too slight to be taken as evidence of a larger glycogen storage.

THE TRANSMISSION OF MALARIA BY DIFFERENT SPECIES OF ANOPHELINAE

In our efforts to control insect-borne diseases, we should know whether more than one species is capable of acting as an intermediary host and, if so, what ones. It is also of importance to determine the relative susceptibility of the different species. More than a hundred species of Anophelinae are now known, and of this number less than a third have been proved to be transmitters of malaria; the remaining species either have not been studied or evidence of their susceptibility is lacking. Beyond this, it has been shown that Anophelinae vary widely in their susceptibility to infection with the same malarial parasite. The same species may not be capable of acting as transmitter of all three types of human malarial parasite.

It is probable that the same species of Anophelinae may vary in its susceptibility to infection with the malarial parasite in different parts of the world and under different climatic conditions. Every species should, therefore, be tested experimentally to determine its ability to act as a disseminator of malaria. A concrete illustration of the need of such information was shown in the instance cited by Carter[1] in connection with the sanitation of the Canal Zone. He estimated that, beside the saving in time, from $100,000 to $250,000 was saved by the knowledge that a certain mosquito (*Anopheles malefactor*), which breeds in the collections of water in hollow stumps, was unable to transmit malaria.

Walker and Barber,[2] of the Bureau of Science, have endeavored in the Philippines to throw light on these questions by investigating the ability of certain species of Anophelinae to act as conveyors of malaria. Of the seventeen known species of Anophelinae in the Philippines, only six are reported to be transmitters of malaria, but it is believed that further study will increase this number. Walker and Barber studied five species, making 184 experiments. Of the mosquitoes used, 1,287 lived to be dissected for the presence of oocysts in the midgut. Four of the five species studied were shown to be capable of being infected with malaria. The experiments with the fourth species (*Anopheles sinensis*) were all negative. They were too few in number to permit definite conclusions, but the authors believe that its susceptibility is probably feeble. Of the species studied, the *Anopheles febrifer* was found to be the most susceptible to infection with the parasites of subtertian malaria, and this species is probably also an efficient carrier of tertian and quartan malaria. It has high avidity for human blood and, being both "wild" and domestic, is probably the most important mosquito concerned in the epidemiology of malaria in the Philippines.

Of the other susceptible species, the *Anopheles barbirostris* stood the lowest in its avidity for human blood and, besides, is a relatively "wild" species. For this reason it probably plays only a slight part in the spread of malaria. The other two susceptible species, *Anopheles rossii* and *Anopheles maculatus*, have a lower susceptibility than the febrifer.

Among the factors which determine the importance of a particular species of mosquito in the transmission of malaria in any country are the susceptibility of the species to human malarial infection, its geographic distribution and prevalence, its avidity for human blood, and its domesticity. Of these factors, susceptibility is of fundamental importance, for it is plain that a mosquito which is not susceptible or only slightly susceptible to infection with the malarial parasite will, no matter how prevalent, be of little or no importance in the spread of the disease, while a very susceptible species may, although less prevalent, play a large part. The questions of the avidity of the species for human blood and its domesticity are also of great importance, for on these two factors depends, to a considerable extent, the facility with which the mosquito may bite persons harboring malarial parasites in their blood and those who may become infected after the mosquito has bitten such persons.

It is by studies such as those reported by Walker and Barber that our sanitarians will acquire information on which to conduct intelligently campaigns for the control of malaria. In the extensive studies on malaria now being conducted in the United States by the Public Health Service,[3] some provision should be made for investigating the importance of the different

1. Carter, H. R.: Am. Jour. Trop. Dis. and Prev. Med., 1913, i, 43.
2. Walker, E. L., and Barber, M. A.: Malaria in the Philippine Islands, Phil. Jour. Sc., B., Trop. Med., 1914, ix, 381.
3. Annual Report of Surgeon-General, U. S. P. H. S., for 1914, pp. 24 et seq.

species of Anophelinae of this country in the transmission of malaria, in order that exact data on the kind reported in the work above referred to may be available for the Anophelinae of the United States.

MEDICAL EDUCATION IN CHINA

The report of the commission sent by the Rockefeller Foundation to investigate medical conditions and medical education in China has recently been noted in THE JOURNAL.[1] The Rockefeller Medical Commission to China, consisting of President Judson of Chicago University, Dr. F. W. Peabody and Mr. Roger S. Greene, made an exhaustive study of the present status of medical education and of the most pressing problems connected with a native sanitary and public health movement in China, with a view to recommending practical aid along these lines. Probably the most effective method of improving public health conditions and raising the general sanitary and social average in China will prove to be through the medium of a native Chinese medical profession, trained in western methods, and possessing the triple advantage of familiarity with local conditions, influence with their people, and scientific efficiency.

The plan is receiving increasing attention among medical leaders in China today, and its validity is unquestionable. So far the leading institutions in medical education have been of two sorts: First and the stronger are those under regular missionary auspices, in many cases representing a union of various societies in the interest of a larger staff and better equipment. Second in numbers, strength and age are those medical schools supported by American university organizations, such as Harvard and Pennsylvania at Shanghai, and Yale at Changsha in central China. A third group from the standpoint of standards, equipment and efficiency would comprise various public and private institutions purporting to give a Western medical education. The situation is that China has a comparatively small number of medical schools in which emphasis is put on scientific standards and values, and that she needs a complete native medical profession to carry a burden of sanitary and public health progress commensurate with the political and economic progress of the republic.

To meet this need, various lines of development have been outlined; but most of them are weak either in provision of adequate funds, in securing support from the Chinese, in their relations with the educational policies of the government, in the practical interest of the Chinese which is necessary for permanence, or in some other essential feature. A scheme for medical education which avoids these defects is outlined by Dr. Yen[2] of the Yale staff at Changsha, in an article in another column. This scheme, in brief, is a cooperation between Chinese and Americans whereby the institution is governed by a joint board of trustees, its maintenance and equipment are provided by the Chinese, and its staff and administration as well as a teaching hospital by Yale. The plan originated with the Chinese, and has the unique merits, lacking in many other plans, of receiving the enthusiastic support of the Chinese, who feel that this is their own enterprise, the cordial approval of the provincial and Peking governments, and a promise of development and permanence which is encouraging. The initiation of this Hunan-Yale Medical School marks the opening of a new era in the medical development of China, an era of cooperation on equal terms between Chinese and foreigners, looking ahead to the gradual assumption of complete control by the Chinese as soon as a generation of competent men has been trained. The Hunan-Yale Medical School is of necessity an experiment, as it is a complete innovation, and has no precedent.

1. Improvement of Medical Conditions in China, editorial, THE JOURNAL A. M. A., April 3, 1915, p. 1163.
2. Yen, F. C.: An Example of Cooperation with the Chinese in Medical Education, THE JOURNAL A. M. A., this issue, p. 1385.

THE SANITATION OF SWIMMING POOLS

The instinctive desire for cleanliness, says Lotze, marks the beginnings of culture; at any rate it indicates a fortunate tendency in that direction. Filth is unendurable in the eyes of those civilized peoples alone who prize in the case of their bodies the same degree of purity which they impart to their enterprises and their personal environment. The care of the skin through the installation of public baths is by no means a modern procedure. Ancient Rome abounded in them, and their maintenance became an important problem of the state. The baths of Diocletian accommodated hundreds. Wherever Roman civilization proceeded it was attended by a respect for personal cleanliness. To-day the home of the ordinary citizen affords abundant opportunity to enjoy the advantages of the bath not only as a means of cleansing the body but also as a tonic and the promoter of a healthy skin —"the best undergarment ever invented." For the less opulent among our people the institution of public baths is coming to be looked on almost as a necessity rather than a luxury. Indeed, with many the bath is included with the other recognized factors for maintaining perfect health and vigor, namely, an abundance of food, fresh air, and muscular work or bodily exercise.

At first thought it may seem like an incongruity to speak of the hygienic dangers lurking in an institution so hygienically approved as is the public bath. It requires little consideration on the part of the trained sanitarian, however, to discover the evidences of possible shortcomings. The growing popularity of swimming pools, for example, has led to an increased interest in the sanitary conditions which prevail in them. There is no longer any doubt that they can actually

transmit disease. When, therefore, the use of swimming pools is made compulsory, as it is in the case of pupils of secondary schools in some parts of the country, a serious duty of sanitary supervision and responsibility arises.

The diseases commonly communicable from swimming pools have been classed as (1) intestinal, (2) eye and ear, and (3) venereal.[1] Most important are those which affect the intestinal canal. Typhoid fever and diarrheal conditions have been traced on reasonably reliable evidence to swimming pools such as one finds installed to-day by private individuals, colleges and universities, secondary and elementary schools, gymnasiums, clubs, steamships, and special bathing establishments. The examination of the swimming-pool water for colon bacilli as an index of pollution, therefore, becomes as logical a method of control as it is in the case of drinking water.

The conditions actually prevailing in respect to the sanitary management of a large variety of swimming pools in the city of New York have been investigated by Manheimer[2] in the bacteriologic laboratories at the College of Physicians and Surgeons of Columbia University. From this report it appears that the collegiate pools in New York are in very good condition, as a result of the careful supervision by the authorities in charge, the knowledge of sanitation possessed by its patrons, and because of the enforcement of the sanitary regulations by swimming teachers. The bacteriologic condition of the water in one collegiate pool closely approximated that of drinking water, which is the standard that has been urged for all swimming pools. Such hygienic perfection is accomplished in part by suitable administration of the plant, including the supervision of the working force, the inspection and ablution of the bathers before they enter the water, and their instruction in pool sanitation. To these agencies for keeping the bacterial count low, other procedures are added. The source of the water should be pure. Frequent refilling and dilution are efficient, though expensive. Refiltration of pool water is another useful and economical scheme; and it is particularly efficient when combined with the most efficient of all agencies, the chemical disinfection of the water.

The pools open to the public with no admission fee and no restriction are attended generally by a fairly good class of people and are elaborately equipped and generously operated. The authorities, however, merely open them and try to keep them clean. Manheimer contends that because of their large and promiscuous attendance, faulty technic and improper organization, they are possible sources for the spread of disease. A reorganization of the plants and the introduction of all the sanitary procedures already referred to would greatly improve them. Association pools, which secure a higher and cleaner class of patrons than the public pools, because they charge an admission fee, show a varying sanitary condition depending on the attendance, preliminary baths taken by the bathers, the extent of chemical disinfection, etc. The examination of the free floating baths stationed during the summer at docks in New York City as far away from sewer outlets as possible showed a sanitary condition so bad as to warrant their abolition or immediate remodeling.

It is obvious, therefore, that public baths, pools and plunges, wherever they are located, should be under the supervision of competent sanitarians. The investigations of Manheimer have elucidated the factors which contribute to the good and bad features of the swimming pool. Aside from the ideals of construction, equipment, water source and supply and personal hygiene to be aimed at, it should be noted that refiltration is an efficient and economical method of keeping water clear during protracted use. Above all, however, chemical disinfection, as with calcium hypochlorite used in suitable amounts, has actually been shown to be efficient for the disinfection of swimming-pool water. Its application to the water, in conjunction with refiltration, is urged as an effective method of pool sanitation.

1. Atkin: Proc. Illinois Water Supply Assn., 1911, iii, 73.
2. Manheimer, W. A.: Studies on the Sanitation of Swimming Pools, Jour. Infect. Dis., 1914, xv, 159.

Current Comment

PROSPECTIVE MEDICAL STUDENTS AND LOW-GRADE MEDICAL COLLEGES

One of the tables published this week[1] (Table D) shows the states in which the diplomas from certain medical colleges are not given unqualified recognition. The table, which is based on official reports from the various state boards, indicates that in from ten to thirty-three states the diplomas issued by thirty-five medical schools are not recognized, and that in these states the graduates of these thirty-five schools are not admitted to the examinations for licenses to practice medicine. It is highly important, particularly in the interests of prospective medical students, that this information should receive wide publicity. Before selecting a medical school, the student should know whether or not the training furnished and the diploma given by that school will qualify him for examination and for a license to practice medicine in any state he may choose. Such information, that is, the fact that recognition has been withdrawn or withheld from certain medical colleges, has not always been given publicity by state boards and, of course, is not published in the announcements of the colleges affected. Many students, doubtless, have not been aware of the facts until long after they have matriculated, or even, perhaps,

1. See page 1412.

until they have applied for a license to practice. Hundreds of students, in fact, have enrolled in low-grade medical colleges, have spent large sums of money, and have devoted four years to study, or have graduated before they have learned not only that they have not received a training in modern medicine, but also that they have received diplomas which are worthless in a large number of states. This is positively wrong and places an irreparable handicap on these students. The important information regarding the non-recognition of low-grade medical colleges by state boards should be in the hands of every prospective medical student before he chooses his college, so that he may avoid a bad start on his life's work. The intelligent student, if he is fully informed, would certainly not waste his time and money in a low-grade, unrecognized institution, when in the same time and with perhaps even less money he could obtain a training in a thoroughly well-conducted medical school. There is certainly no dearth of well-conducted, thoroughly equipped medical colleges in which the student can get a training that will enable him to render excellent service to the people who will depend on him for medical attention or hygienic instruction.

THE PUBLIC AND LOW-GRADE MEDICAL COLLEGES

The information in Table D is of special importance to the public; it indicates the states that are not adequately protected against untrained doctors. The table shows that the boards of thirty-two states are making some use of the legal power conferred on them to discriminate between medical colleges and to refuse recognition to those which are of low standard or are not properly equipped to furnish their students a satisfactory training in modern medicine. Of the thirty-one state boards, nine[1] will not license the graduate of any medical college unless he had completed at least two years of work in an approved liberal arts college before taking up the study of medicine. There are seven states[2] which have not given the boards full legal authority to pass on the character or standing of the colleges whose graduates may be admitted to examination, and in nine other states,[3] the boards are apparently given ample power, but, so far as the reports indicate, and for various reasons, the boards are not using that power. Arkansas and Florida each have three separate and independent licensing boards, one of which — the regular board — has refused to recognize low-grade colleges under its jurisdiction. We learn of no such action by the other two boards in each of these states. It goes without saying that since the graduates of these low-grade medical colleges cannot secure licenses in thirty-two states, they will flock to those in which they are still eligible. These sixteen states, therefore, are certain to be the dumping-ground for the output of these inferior colleges just so long as the practice acts permit, or so long as the state licensing boards do not take action against them. The people have the right to expect that the state (on which the national constitution places the responsibility) will grant them proper legislation, and that the licensing board — the only legal body having these matters in charge — will take such action as is necessary to protect them against the ill-trained product of low-grade medical colleges.

1. These states are Alabama, Colorado, Iowa, Indiana, Minnesota, New Hampshire, New Jersey, North Dakota and South Dakota.
2. These states are Arizona, District of Columbia, Idaho, Massachusetts, Montana, Tennessee and Wyoming.
3. These states are California, Kansas, Maine, Missouri, Nebraska, Nevada, North Carolina, Utah and Washington.

THE CAUSE OF TYPHUS FEVER

One of our readers has called attention to a sentence in the editorial discussion on "Typhus in Serbia" in THE JOURNAL last week questioning its correctness. The statement reads: "Typhus fever is doubtless of microbic origin, but the infective agent is probably so small that it must be placed in that ever puzzling class, the filterable viruses." While the object of the editorial was not to analyze the experimental work on the etiology of this disease, a consideration of such work is necessitated by the doubt expressed. The criticism directed against this statement appears to be well taken because Ricketts and others[1] have offered evidence to show that the virus in the blood of typhus patients is held back by Berkefeld filters. The statement incidentally does not take into account the possibility that the actual cause of typhus fever has been discovered. If this possibility becomes a certainty the credit for the discovery will be given Plotz,[2] who reported his results in a preliminary way about a year ago. Plotz cultivated by anaerobic methods a bacillus from the blood of typhus patients, which produced a febrile reaction in guinea pigs similar to that which occurs after injection of typhus blood. He also obtained complement fixation with his bacillus and the serum of typhus patients obtained after crisis. Wilder regards the bacillus observed by Plotz as very likely identical with that seen by Ricketts and himself, as well as by other observers, in the blood of typhus patients. Should this bacillus become accepted as the cause of typhus fever, one reason for its not having been recognized earlier through growth in pure culture is the failure of the preceding investigators to use anaerobic methods of culture. Just at this time there is so much opportunity to study typhus fever that it probably will not be long before the question whether the bacillus observed by Plotz is the cause of typhus will be settled. It would be fortunate indeed if this bacillus is found to be the cause as then we might hope that preventive inoculations could be instituted at once now when some simple method of prevention is needed so sorely. It is reported that several American physicians, who have recently gone to Serbia, have been inoculated with a vaccine prepared from cultures of Plotz's organism and active experimentation is to be carried out with it in that country. We may hope then soon to learn whether the new organism is the cause of typhus.

1. For reference to literature see Russell M. Wilder, The Bacteriology of Typhus Fever, THE JOURNAL, 1914, lxiii, 937.
2. Plotz: The Etiology of Typhus Fever (and of Brill's Disease), Preliminary Communication, THE JOURNAL, May 16, 1914, p. 1556.

EDUCATIONAL ADVANCES IN OREGON AND TENNESSEE

The fact that Tennessee, after repeated attempts, has succeeded in obtaining a new medical practice act is of particular importance to medical education and medical licensure, not only in Tennessee but also in the South and in the country as a whole. With the securing of this legislation, every one of the Southern states has provided for standards of preliminary education for those who are to practice medicine, and all Southern states now require that every candidate for the license to practice medicine must have graduated from a reputable medical college. In fact, this legislation closes what was perhaps the most wide-open door in the country whereby incompetent and untrained doctors could enter the medical profession. No longer, however, may the hordes of graduates of inferior colleges and—worse still—the hordes of those who did not graduate anywhere, flock to Tennessee! Hereafter, they are barred from the entire South, and for easy entry to the profession they must look elsewhere. They cannot go to Oregon, since Oregon also has amended its law requiring graduation from a reputable medical college. There is a chance in Colorado, but that chance is exceedingly slender, since in that state they must pass a severe examination — an examination that cannot be passed after a short course in a cramming school; they must take an examination which has been passed by only two undergraduates in nine years! No, hereafter they will doubtless flock to Massachusetts, a state apparently so complaisant in its learning as to see no need of protective laws against ignorance; they will flock to Massachusetts, the last state which continues to open its arms to those who avowedly have not completed their medical training, no questions, in fact, being asked regarding the applicant's educational qualifications! Possibly even Massachusetts may soon see the need of amending its law so as to send all unprepared candidates back to the colleges and hospitals to complete their training before obtaining the legal right to preside over human lives. Massachusetts, how about it?

OSKALOOSA, CONGRATULATIONS!*

Oskaloosa is in Iowa, and, of more importance, the *Times* is in Oskaloosa. The *Times* is a weekly newspaper exemplifying the new era of American journalism. In its issue for April 16 the editor says that the paper is going to take a "spring tonic," "not that the *Times* is in a bad way, for rather it is healthy and lusty, but because the editor has come to the conclusion that its blood needs purifying." To further elucidate:

> "Advertising is the blood of the paper, and the doctor's prescription calls for the adoption of a new policy by which all advertising for patent medicines shall be refused. No more contracts for patent medicine advertising will be entered into by this paper. As rapidly as possible those now carried will be discontinued."

In explaining its reason for rejecting *all* "patent medicine" advertising the paper says:

> "The *Times* hasn't time to investigate all medicines that offer their advertising and determine their value. The best way and most effective is to refuse space to them all."

Here, then, we have a country newspaper rejecting many hundreds of dollars of advertising revenue yearly for a principle. Realizing that there is no competent board to pass on the question of what constitutes objectionable and unobjectionable "patent medicines," the paper, rather than be untrue to its readers' interests, rejects all "patent medicine" advertisements. Therein, lay publications suffer a disadvantage of which medical publications are relieved. The medical profession, in the Council on Pharmacy and Chemistry, has a competent body to pass on the question of reputable and disreputable medicinal products advertised to physicians. The difference, however, is that while some honest newspapers are willing to reject all "patent medicine" advertising revenue for principle, many medical journals are unwilling to give up even a part of their "patent medicine" — the term is used advisedly — revenue. The action of the Oskaloosa *Times* is one more unvoiced criticism of medical journalism that the medical profession should take to heart. The Oskaloosa paper concludes its editorial:

> "The *Times*' spring tonic will be a little expensive at first, but the *Times* is confident that it will be repaid for the taking by a better feeling and a greater opportunity for service to the people of Mahaska County."

We believe the confidence of the *Times* is well placed. We know that its action will redound to the health of the people of Oskaloosa and vicinity.

UNSKILLED TAMPERING WITH HUMAN AILMENTS

One who wants his watch repaired sends it, not to a blacksmith but to a skilled watchmaker: to one who knows the position and purpose of each of its delicate and intricate parts. Here the importance of expert service and the ability to render it are recognized. Not so, however, when the delicate life processes of a human being, rendered sensitive by sickness or injury, are in need of repair. Here the man who is careful to send his watch to an expert is likely to patronize the blacksmith when he or one of his family is ill. To recognize promptly and positively many of even the common diseases requires a skilled diagnostician who understands the use of scientific laboratory methods. The successful treatment of diphtheria, malaria and syphilis—as examples—depends on an early and positive recognition of the causative agent, respectively, the Klebs-Loeffler bacillus, the *Plasmodium malariae*, and the *Treponema pallidum*. To be able to do this requires a knowledge of these organisms and skill in the use of the microscope and laboratory methods of diagnosis. The cure of many diseases, such as tuberculosis, cancer, spinal meningitis, etc., depends not only on a positive but especially on an early diagnosis, and this, likewise, requires a thorough

* See Correspondence department, page 1412.

training in modern medicine. Without a training in scientific methods, the diagnosis of these diseases is uncertain, or impossible, since the signs and symptoms easily lead to their being confused with disorders requiring radically different methods of treatment. Without a correct diagnosis any form of treatment is guesswork and unscientific. A training in the branches fundamental to modern scientific medicine is an essential qualification for all who undertake to treat human ailments, no matter what treatment be adopted. This is a fundamental fact that defies contradiction. It is immaterial whether the treatment be a form of massage or tissue manipulation, and given under the name of osteopathy, chiropractic, naprapathy or spondylotherapy; whether it be psychotherapy, given under the name of Christian Science, mental healing, or what not—the fact remains that any legislation relative to the regulation of what is known as the practice of medicine—that is, the healing of the sick—that does not recognize this fundamental fact is not in the interest of the public health or the public good.

THE UNITED STATES SUPREME COURT AND MEDICAL CULTS

In the treatment of human ailments the matter of primary importance to the conscientious practitioner is the diagnosis. What is causing the trouble? On the answer to this question depends the treatment, no matter whether the "doctor" is a physician, an osteopath, a chiropractor, a mental healer, or what not. The diagnosis is the essential, and unless the "doctor" is sufficiently well trained to make a diagnosis, he is not qualified to treat the patient intelligently by any method whatever. Treatment is certainly of great importance, and from the patient's point of view is doubtless most essential. But without a knowledge of the disease, how can intelligent treatment be administered? These fundamental facts are so often ignored in the claims of sectarian cults that the clear cut statements in one of several decisions in regard to these matters by the United States Supreme Court are worth repeating. In a discussion of osteopathy[1] the court said:

> An osteopath professes to help certain ailments by scientific manipulation affecting the nerve centers. It is intelligible, therefore, that the state should require of him a scientific training. He, like others, must begin by a diagnosis. It is no answer to say that in many instances the diagnosis is easy—that a man knows it when he has a cold or a toothache. For a general practice science is needed.

At the same time the court distinguished between osteopaths, who act on their own initiative, and nurses and masseurs, who follow a physician's instructions, as follows:

> An osteopath undertakes to be something more than a nurse or a masseur, and the difference rests precisely in a claim to greater science, which the state requires him to prove. The same considerations that justify excluding him (under the requirements of the practice act) justify excluding the lower grades (nurses and masseurs) from the law.

1. Ira W. Collins vs. State of Texas (U. S.), 32 S. C. Rep. 286, THE JOURNAL A. M. A., Aug. 3, 1912, p. 392.

The court, therefore, decisively pushed aside the masses of argument regarding the "rights" of this, that or the other medical sect, and revealed the real point at issue—the necessity for sufficient fundamental knowledge of the human system to qualify one to make a diagnosis. The court emphasized that in order to make a diagnosis the practitioner of osteopathy, or any other cult, must have the same scientific training as is required of physicians. It is clearly the duty of the state, therefore, to provide an educational qualification which will guarantee that every licensed practitioner shall be competent to make an intelligent diagnosis. Certainly the public has the right to expect that only those who are competent will be given the state's endorsement, conferring on them the right to treat human ailments.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

IDAHO

Personal.—Dr. Charles J. Kinsolving, St. Maries, was seriously injured by the overturning of his automobile, March 20.——It is announced that Dr. Ralph Falk, Boise, secretary of the State Board of Health, has been asked to resign on account of personal differences between him and the governor of the state.

State Board Election.—At the annual meeting of the State Board of Medical Examiners in Lewistown, April 7, the following officers were elected: president, Dr. J. Eugene S. St. Jean, Wallace; vice-president, Dr. George T. Parkinson, Preston, and secretary-treasurer, Dr. Charles A. Dettman, Burke. The board, at its meeting, examined seventeen applicants for admission to practice. The next meeting will be held at Wallace.

ILLINOIS

Personal.—Dr. Dillon G. O'Neil, Elgin, has been appointed assistant physician on the staff of the Anna State Hospital. ——Dr. William Dougall, Joliet, who has been critically ill in St. Luke's Hospital, Chicago, is reported to be improving.

New Buildings Denied State Hospital.—The requests of Dr. Henry J. Gahagan, superintendent of the Elgin State Hospital, for about $115,000 will fall short about $85,000 as the committee on appropriations has refused to allow the erection of a tuberculosis sanatorium and a special female ward.

Lutheran Hospital at Moline.—Ground was broken March 30 for the foundation of the new Lutheran Hospital, Moline, one wing of which is now to be built to cost $60,000 and will accommodate sixty-one patients. The building will be three stories and basement in height, and fireproof. Eventually the central building and west wing will be built, the whole institution to cost $160,000.

Chicago

Reception to Mrs. Ricketts.—A reception in honor of Mrs. Howard Taylor Ricketts was held by the members of the Ricketts Laboratory of the University of Chicago in that institution, April 22.

Regiment Inoculated Against Typhoid.—The work of inoculation of the National Guard of the state against typhoid fever began April 12, when about 200 members of the First Infantry received the first antityphoid inoculation.

Measles Epidemic.—According to Health Commissioner George B. Young, during March there were in the city 2,586 cases of measles, and during the week ending April 10 there

were 1,080 cases, which amounts to an epidemic. One ward had 382 cases and seven wards had more than 100 cases each.

Personal.—Dr. Alice Hamilton sailed for Europe with the peace commission, April 13.——The honorary degree of doctor of laws was conferred on Dr. John B. Murphy by the Catholic University of America, Washington, April 15.——Dr. Aime Paul Heineck announces that he has severed all connection with the Bennett Medical College.

Cooperation in Tuberculosis Fight.—Representatives of Chicago and Cook County met April 15 to discuss the plans for cooperation of all antituberculosis agencies in the county. A hospital admission bureau will direct the work of the cooperating institutions, the Municipal Sanitarium of Chicago and Cook County Tuberculosis Sanatorium, Oak Forest. This bureau is to be conducted by a number of physicians representing both the city and the county, and assignments will be made to the Municipal Sanatorium, Oak Forest Institute and tuberculosis department of the Cook County General Hospital, according to circumstances. This plan was concurred in by the physicians who participated in the conference, and committee was appointed to work out the detail.

Will Entertain Delegates to National Convention.—The Chicago Tuberculosis Institute announces the Chicago program for delegates to the eleventh annual meeting of the National Association for the Study and Prevention of Tuberculosis, who will stop in Chicago, June 8 and 9, on their way to Seattle, Wash. The headquarters will be at the Hotel La Salle and the program announces that on the first day delegates will be provided with automobiles to visit the various tuberculosis establishments about Chicago, such as the Edward Sanatorium, Naperville; the Chicago Fresh Air Hospital, Rogers Park; The Chicago-Winfield Sanatorium, Winfield, Ill.; Ridge Farm, the Preventorium for Children, Deerfield, Ill.; the Tuberculosis Department of the Cook County Hospital, Chicago, and a trip to industrial establishments to observe the supervision of health of the employees. Railway transportation will also be provided for those who wish to visit Cook County Tuberculosis Sanatorium, Oak Forest. In the evening delegates will be entertained at a Good Fellowship dinner by the Chicago Tuberculosis Institute. On the second morning the delegates will be taken by automobiles to the Municipal Tuberculosis Dispensaries, open-air schools and tuberculosis exhibit, thence to the Municipal Tuberculosis Sanatorium where luncheon will be served. After luncheon the sanatorium will be inspected and the delegates will be taken back to Chicago by automobiles and will leave in the evening for Seattle.

KANSAS

State Board Appointments.—The following appointments to membership to the State Board of Health have been made by Governor Capper: Drs. Oliver D. Walker, Salina; William M. Earnest, Washington; Charles H. Lerrigo, Topeka; Charles H. Ewing, Larned; Harry L. Aldrich, Caney; and Clay E. Coburn, Kansas City, and M. O. Lock, attorney, Topeka.

Personal.—Dr. J. E. Edward Graf, Assaria, has been reappointed physician of Saline County.——Dr. Leon Matassarin, Wichita, has returned and resumed practice.——Dr. Otto Kiene, Topeka, has been appointed superintendent of St. Joseph's Hospital, Concordia.

Health School.—The fifth annual school for physicians and health officers was held at Lawrence and Rosedale from April 19 to May 1; the work of the first week being at the State University, Lawrence, and the second at the Hospital of the School of Medicine, Rosedale. Surgeon Mark J. White, U. S. P. H. S., St. Louis, Mo., Dr. John S. Fulton, Baltimore, secretary of the Maryland State Board of Health, and Dr. Albert J. Chesley, Minneapolis, epidemiologist of the Minnesota State Board of Health, gave the course in public health.

MICHIGAN

Mumps at Detroit.—Up to April 10 more than 200 cases of mumps had been reported in the suburb of Highland Park. The spread of the disease was said to be due to the failure of parents to keep children with the disease isolated at home.

Personal.—Dr. George J. Corby, Calumet, has been appointed assistant at the Iroquois Memorial Hospital, Chicago.——Dr. S. Edwin Cruse has been reelected mayor of Iron Mountain.——Dr. Berton G. Watson, Benton Harbor, fractured his right arm near the wrist while cranking his automobile.——Dr. Herman Ostrander has been elected secretary of the Kalamazoo State Hospital Board.

MINNESOTA

Personal.—Dr. James F. Hammond, St. Paul, has volunteered for service with Great Britain in the war zone.——Dr. LeRoy Brown, St. Paul, has been appointed police surgeon, succeeding Dr. Carl A. Ingerson, St. Paul, resigned.

Hospital News.—Under the new retrenchment policy of the management of the Minneapolis City Hospital, it is proposed to close an entire floor of the west wing of the institution.——The new annex to the McIntyre Hospital, Virginia, has been completed, doubling the capacity of the institution.——A new hospital has been commenced at Slayton by Drs. Henry C. Doms and Leon A. Williams, to be known as the Home Hospital.——A house bill has been introduced by Representatives Searles and Laron appropriating $25,000 to establish a fourth state hospital of the insane and directing a state board of control to acquire a suitable site and to submit plans to the next legislature.——Citizens of Lake City have subscribed more than $7,200 of the $10,000 required for the establishment of a local hospital.——Thief River Falls is to have a hospital to cost $25,000.——A bill providing for the erection of a hospital for Indians on the Fond du Lac reservation has been amended by the Senate, so that the institution will be located in the city of Cloquet. The bill provides an appropriation of $25,000 for the hospital.——A bill has been introduced in the Senate to appropriate $25,000 for the establishment of a hospital for the insane somewhere north of the south line of Pine County.

MONTANA

Wants Physician for Health Officer.—The State Board of Health, in resolutions adopted April 2, while commending the present health officer of Helena, requests and urges that a licensed physician be appointed in his stead, giving it as its opinion, that the duties of health officer can be performed properly, efficiently and intelligently only by a physician who is trained in sanitary sciences.

Personal.—Dr. Alexander D. Macdonald, Kalispell, representative from Flathead County in the legislature and speaker of the thirteenth assembly for the last three sessions, was appointed superintendent of the State Tuberculosis Sanatorium, Galen, April 3, succeeding Dr. Thomas D. Tuttle.——Dr. Wimon W. Andrus, Miles City, has been appointed a member of the State Board of Medical Examiners to succeed himself.

Hospital Notes.—Physicians of Glendive are urging the establishment of a municipal hospital in that city, as the Northern Pacific Hospital is able to care only for employees except in cases of absolute emergency.——The committee which has in charge the raising of funds for the construction of an addition to the Custer County Hospital has already obtained promises of nearly $30,000. The plans call for a building two stories and an attic in height, 70 by 80 feet, of pressed brick, with ten rooms for private patients on the first and the second floors and nine private rooms on the third floor.——The Terry Hospital has been completed and was formally opened March 19. The entire second floor of the building is used for hospital purposes.

NEBRASKA

Tuberculosis Clinic Organized.—The Sioux Tubercular Tent Clinic has been organized at Harrison with a capital stock of $10,000.

Personal.—Dr. John R. Nilsson, Omaha, who was operated on at Rochester, Minn., for the removal of gallstones recently, is reported to be improving.——The office of Dr. John R. C. Carter, Ainsworth, was destroyed by fire, March 17.

New Teaching Hospital.—The state legislature is reported to have passed a bill appropriating $150,000 for a new hospital to be erected on the campus of the University of Nebraska College of Medicine, Omaha. This hospital will be under the full control of the medical school as a teaching institution.

NEW HAMPSHIRE

Personal.—Dr. Charles P. Bancroft, Concord, who was removed from office as superintendent of the State Hospital, Concord, by the board of control, was reappointed April 15, as the charges made against him were shown to be unfounded.——The residence of Dr. Edwin M. Parker, Reeds Ferry, was burned April 9.

The New Practice Act.—It is reported that a new medical practice act, just secured in New Hampshire, raises the standard of preliminary education to two years in a registered college of liberal arts, and that this act takes effect for

medical graduates of 1919 and thereafter. It also provides for a single board of medical examiners.

NEW JERSEY

Personal.—Dr. Frederick S. Hammond, Trenton, of the staff of the New Jersey State Hospital, who has been seriously ill with meningitis, is reported to be improving. ——Dr. Joseph F. X. Stack has been appointed commissioner of health of Hoboken.

Smallpox at Millville.—D. C. Bowen, chief sanitary inspector of the New Jersey State Board of Health, is investigating the cause of the epidemic at Millville. Two more cases in light form were reported March 30, and the authorities of the state board expect the disease will be stamped out in two or three weeks.

New Medical Practice Act.—New Jersey has a new medical practice act which provides that all applicants for license to practice medicine after July 1, 1919, must have had in addition to a four-year high school education, at least one year of collegiate work, including courses in physics, chemistry, biology and French or German. After July 1, 1920, all candidates must have completed two years of collegiate work, including the courses mentioned. The law also requires that after July 1, 1916, each candidate after graduating from a medical school must have served at least one year as an intern in a hospital approved by the licensing board.

NEW YORK

Whole-Time Health Officer.—By a vote of 130 to 4, the assembly on April 8, passed the Hinman bill which requires that the state health commissioner and the directors of the divisions under him, give their entire time to the duties of their office.

Dr. Ordway Accepts Deanship.—An authentic statement says that Dr. Thomas Ordway of the Harvard Medical School has accepted the deanship of the Albany Medical College. Dr. Ordway was formerly professor of pathology in the medical school of which he now becomes dean.

Office of Coroner Abolished.—Governor Whitman signed the Stoddard bill, abolishing the office of coroner in New York City, on April 14. The terms of the present coroners will expire on Jan. 1, 1918, and the bill will go into effect at that time. The duties of the office are to be transferred to a chief medical examiner to be appointed by the mayor. The examiner will name his assistants who will do the work now performed by the coroners.

Single Head for State Hospitals.—The senate has passed the Sage bill legislating out of office the present state hospital commission, and providing for a single state hospital commissioner at a salary of $10,000 per year. The commission cannot be abolished because it is a constitutional office, but the bill provides that it shall have power only to visit the state institutions, having no hand in their management or supervision.

Personal.—Dr. Mason R. Pratt, superintendent of the Hospital of the Good Shepherd, Syracuse, recently appointed superintendent of the Hebrew General Hospital, Baltimore, and began service there April 20.——Dr. Henry J. Hunter has been elected president, Dr. Frank B. Conterman, secretary, and Dr. Harry H. Halliwell, chairman of the executive committee of the medical board of Ilion Hospital.——Dr. Charles F. Wiley, Syracuse, has been committed to the Psychopathic Hospital.

Attempt to Amend Public Health Law.—Assemblyman Hinman has introduced five bills into the legislature radically amending the public health law. Three of these amendments have to do with abolishing the duties and functions of the public health council; a fourth reduces the number of sanitary supervisors to ten, cuts the salaries from $3,000 to $2,500, and makes the establishment of their districts discretionary instead of mandatory. Similarly the bill makes discretionary the establishment of the divisions of the department, namely, those of child hygiene, public health, nursing, tuberculosis, vital statistics, communicable diseases, administration, health education, sanitary engineering and laboratories and research. The health commissioner is empowered to eliminate or combine any of these divisions. The fifth bill requires the health commissioner to devote all of his time to the work of his office. The passage of these amendments would, it is claimed, overthrow all the constructive work of present public health administration which has been so effective but which has been in operation too short a time to fully demonstrate its possibilities in bettering the health of the people. Prominent members of the medical profession are voicing a vigorous protest against these reactionary measures.

State Society Meeting.—The one-hundred-and-ninth annual meeting of the Medical Society of the State of New York, to be held in Buffalo, April 26 to 29, does not confine its benefits to physicians, but offers entertainment and instruction to the public as well. Invitations have been extended to the people of Buffalo to visit the exhibition hall in the Sixty-Fifth Regiment Armory, and to attend a course of popular symposiums on matters of common interest to both physicians and laymen. These symposiums are on "Public Health," "Child Saving," "Child Welfare," "Mentality of the Child," "Safey First," "Prevention of Blindness" and "Conservation of Vision." In addition to these lectures, there will be exhibitions of moving pictures illustrating various phases of public health work. The scientific work of the society is comprised in six sections—medicine, surgery, obstetrics and gynecology, pediatrics, eye, ear, nose and throat, and syphilis. The entertainments provided include the inspection of the State Institute for the Study of Malignant Diseases, a reception and military review in honor of Major-General William C. Gorgas, Surgeon-General, U. S. A., automobile trips, and trips to Niagara Falls by train and trolley. A reception will be given Miss Julia C. Lathrop, chief of the Children's Bureau, U. S. Department of Labor, on April 27, in the reception room of the Armory, and the annual banquet will be held at the Hotel Statler on April 28.

New York City

Regulations Against Crowded Cars Successful.—The New York Railway Company, the Third Avenue Company and the surface lines on Staten Island have accepted the regulations against overcrowding on their cars and it is believed that it will be only a question of time when the spectacle of a closed trolley car "jammed to the doors" will be a forgotten barbarity. In the words of the New York *World* "The quiet effectiveness with which this change has been brought about continues to amaze New Yorkers. What the public service commission ought to have done, but failed to do, the department of health has done."

Personal.—Dr. James F. Percy, Galesburg, Ill., read a paper before the New York Academy of Medicine, April 15, on "Technic of Applying Heat in the Treatment of Inoperable Carcinoma of the Uterus," and demonstrated his technic at the General Memorial Hospital on the same afternoon. ——Dr. Hermann Grad has been appointed attending surgeon of the Woman's Hospital in the State of New York. ——Dr. Daniel B. Brinsmade has been elected a member of the Polhemus Memorial Clinic Corporation in place of Dr. Joseph H. Raymond, deceased, and subsequently he was elected a member of the board of directors of the clinic and its secretary.

Drug Habitués Seek Relief.—The effect of the Boylan antidrug law, which went into effect April 1, and of the federal Harrison law, together with the activities of the police department, by depriving drug users of their accustomed drugs is driving many of them to seek relief in institutions. It is reported that since April 1 there have been from 30 to 40 applicants a day at the Metropolitan Hospital, in addition to those cared for in other institutions. The finance committee of the board of aldermen has approved an appropriation of $9,000 for the care of "cured" drug victims at the inebriate farm at Warwick. It is proposed to establish a tent colony which will care for 100 convalescents.

PENNSYLVANIA

Philadelphia

To Guard Port Against Typhus.—The state and federal authorities are taking a precaution at this point to prevent the entering of any persons to the United States who have been exposed to typhus fever. Senior Surg. Fairfax Irwin, U. S. P. H. S., and State Quarantine Officer Heller are making an extra inspection of vessels since the contagion appeared in Serbia.

Personal.—Dr. David L. Edsall of Harvard University delivered the annual address of the Pathological Society of Philadelphia, April 22, at the College of Physicians. The subject was the "Bearings of Industry Upon Medicine."—— Dr. J. Solis Cohen has presented to the Philadelphia Laryngological Society his extensive library of magazines and a complete set of his reprints, dating from 1874 to his last article. The library will henceforth be known as "The J. Solis Cohen Foundation."

For Doctors Building.—The Philadelphia County Medical Society has taken an option on the "Jayne property" at Nineteenth and Chestnut streets, where it is planning to erect a 12-story office building at an approximate cost of $1,500,000. The membership of this society has increased to rapidly that it has been found necessary to provide an auditorium that will accommodate 1,500 persons. Offices for physicians and dentists will also be provided for. The president of the County Medical Society, Dr. Edward E. Montgomery, recently appointed a committee on the home for the Philadelphia County Medical Society as follows: Dr. James M. Anders, chairman; Drs. Henry W. Cattell, Joseph Sailer, William D. Robinson, Isidor P. Strittmatter and Levi J. Hammond.

Medical Institutions Notes.—Work has been started on a four-story maternity for the University of Pennsylvania, to be built on the south side of Spruce street opposite Thirty-Sixth street, and to cost $130,000.——The Polyclinic and Philadelphia general hospitals have accepted women as interns. Dr. Ricka S. Finkler of Russia, a graduate of the University of St. Petersburg, has been appointed an intern at the Polyclinic Hospital. Drs. Marion H. Rea and Maud Kinnaman have been appointed to the Philadelphia General. These women are graduates of the Woman's Medical College of Pennsylvania.——The new dispensary building at Girard and Corinthian avenues for the German Hospital, for the erection of which a contract has been awarded, will be one story high, of steel and concrete, 52 by 84 feet, and will cost $25,000.

A Greater Chamber of Commerce.—Members of the medical profession are taking a very active part in the movement to create a greater chamber of commerce in this city, a chamber that will unite in one powerful central organization all the business and professional men of the city and the medical committee includes: Drs. William A. Pearson, William M. L. Coplin, Edward E. Montgomery, S. Lewis Ziegler, Jay F. Schamberg, L. Webster Fox, Seneca Egbert, Charles H. Frazier, George E. Pfahler, Francis D. Patterson, Robert N. Downs, Jr., Charles A. E. Codman and James M. Anders, chairman. The plan of organization for the new chamber provides for eight separate bureaus, each of which will be of special interest to the physician: The industrial bureau, an active agency for the study and prevention of occupational diseases; the bureau of legislation to secure the passage of bills at Harrisburg to preserve the health and promote the welfare of citizens; the charity bureau to secure complete and accurate information in regard to the hospitals and other philanthropic agencies in Philadelphia, so that the chamber may assist in financing those worthy of support and prevent the great waste of time and money that now results from duplication of work; and also a civic bureau, to be a powerful factor in creating public opinion in favor of public health measures.

TENNESSEE

New Laboratory for Vanderbilt.—Plans and specifications for the laboratory building to be erected by Vanderbilt University at a cost of $250,000 have been filed in the Nashville bill of exchange.——Bids have been asked for the construction of a medical section of Vanderbilt University, which is to cost $350,000.

Addition to Sanatorium.—Contracts amounting to nearly $40,000 were awarded March 31 by the tuberculosis commission of Nashville and Davidson counties for erection of an addition to the tuberculosis sanatorium. The new building will accommodate sixty patients and will thus double the capacity of the institution.

New Medical Practice Act.—A new medical practice act has been secured in Tennessee which provides that not only must candidates hereafter be graduates from medical colleges, but also that those graduating in 1919 and thereafter, must have had a preliminary education of at least one year of collegiate work in addition to a four-year high school course.

Personal.—Dr. James L. Andrews, Memphis, has been appointed superintendent of the Health Department of Memphis, succeeding Dr. John C. Bell, resigned.——Dr. S. H. Hodge, Knoxville, who has been on duty with the American National Red Cross in Serbia and who has been ill in a hospital in Salonica, is convalescent, has resigned from the Red Cross service and will return to the United States.——Dr. John R. Rathmell, Chattanooga, who has been ill for a long while, is reported to be improving.

Cooperation Between Physicians and Druggists.—At the last meeting of the Memphis and Shelby County Medical Association in Memphis, a resolution was adopted "That the Memphis and Shelby County Medical Association go on record as being opposed to the long established custom of writing prescriptions on blanks advertising any firm and request all their members not to use such blanks, regulation blanks being obtainable from any druggist." The prescription blank in question bears at its top, the model, "Better Fellowship at Any Price"; below, the heading Memphis Drug Club; a blank for the name and address of the patient, the blank for prescription and at the bottom the register number, date, name and address of the physician and the legend, "This Prescription Cannot be Refilled."

TEXAS

Physician Gains Suit.—In the damage suit of Ed P. Clay against Dr. Bacon Saunders, Fort Worth, in the forty-eighth district court, the judge gave peremptory instructions to the jury to return a verdict in favor of Dr. Saunders as the testimony showed that the defendant had not only used ordinary professional skill as is required by law, but had used extraordinary skill in the case in question.

State Medical Society Meeting.—The annual meeting of the State Medical Association of Texas in Fort Worth, May 4 to 6, will be preceded by a public meeting on May 3, at which Assistant Surgeon-General William Colby Rucker, U. S. P. H. S., will deliver an address on "Bubonic Plague and Its Relation to Public Health." The annual memorial services will be held May 4, under the direction of Dr. Marquis E. Gilmore, Fort Worth, the eulogy on the deceased members being pronounced by Dr. Charles M. Rosser, Dallas.

Quarantine Orders Issued.—The governor has issued a proclamation relating to foot and mouth disease which became effective April 15, modifying previous orders. The modification permits the shipment of cattle and other live stock into Texas from New Mexico, Arizona and Colorado, and permits under restrictions the shipment of horses, mules, jacks and jennets from Oklahoma to Texas and lifts the embargo on the shipment of hay, straw and fodder, providing the shipments from New Mexico, Arizona and Colorado shall first have been disinfected.

Personal.—Dr. Thomas V. Fryar, Dallas, has been appointed chief surgeon of the Texas National Guard, succeeding Lieut.-Col. Alvis B. Kennedy, Bonham, retired.——An ambulance company has been organized at Fort Worth in command of Major John J. O'Reilly.——Lieut. Edgar W. Loomis, Dallas, has been assigned to duty with Battery A, in that city.——Dr. J. W. Falvey, Long View, fractured his right arm, April 3, while cranking his motor car.——Dr. Beverly T. Young, San Antonio, has been appointed superintendent of the Southwestern State Insane Hospital, in that city, vice Dr. Frank S. White, and assumed his duties April 3.

WISCONSIN

Personal.—Dr. George H. Williamson, Neenah, has been appointed local surgeon for the Northwestern System.——Dr. Charles E. Lauder, Viroqua, is convalescent after an attack of ptomain poisoning.——Dr. Frederick C. Werner, Watertown, has been appointed deputy revenue collector under the Harrison anti-narcotic law.——Dr. Robert L. Williams, Milwaukee, has resigned as a member of the staff of the Emergency Hospital to become first assistant in the State Tuberculosis Sanatorium, Wales.——Dr. John R. Currens has been elected mayor of Two Rivers.——Dr. Albert J. Pullen has been unanimously reelected president of the village of North Fond du Lac.

Discussion of Quarantine and Fumigation Methods.—At a recent meeting of the Milwaukee County Medical Society Health Commissioner George C. Ruhland decried the present method of formaldehyd fumigation of houses after infectious diseases, which he said was an obsolete procedure and unnecessary. This precipitated a discussion of present state quarantine regulations, during which Dr. Patrick H. McGovern declared that present quarantine methods in infectious diseases work a great hardship on poor families, where the bread-winner is kept from work or compelled to quarter himself elsewhere during the quarantine, at an expense which he cannot afford. He advocated room quarantine, with freedom for other members of the family. This position was supported by other members. Dr. Leopold Schiller, however, dissented. He said this plan would work among intelligent and well-to-do people with plenty of house room, but would be impossible to enforce among many working people living under poor housing conditions, and among those who refused to send patients to the hospitals the entire families would have to be quarantined.

GENERAL

Willard Gibbs Medal Awarded.—The Willard Gibbs Medal was awarded April 16, by the Chicago Section of the American Chemical Society, to Arthur A. Noyes, director of the Research Laboratory of the National Institute of Technology. The presentation address was made by Prof. Julius Steiglitz of the University of Chicago and Dr. Noyes spoke on the work to which he has devoted the last twenty years of his life in the development of a new system of qualitative chemical analysis including nearly all of the metallic elements.

For Study of Animal Diseases.—The Rockefeller Foundation has announced that it will begin work soon on the construction of a plant near Princeton, N. J., the cost of which will be about $1,000,000, for the study of animal diseases. The foundation has purchased 480 acres east of Lake Carnegie on which will be erected a completely equipped laboratory for the study of bacteriology in its relation to animal diseases. A bill passed the legislature recently giving to the State Board of Health, the power to grant to regularly incorporated colleges, universities and philanthropic institutions in New Jersey, permission to make experiments on animals under certain specified restrictions.

Medical Meetings at the Panama-Pacific Exposition.—The various societies, listed to hold their regular medical conventions and congresses in connection with the exposition, are as follows: Pacific Coast Oto-Ophthalmological Society, sessions June 14, 15, 16; American Society of Tropical Medicine, sessions June 14, 15, 16; American Association Medical Milk Commissions, sessions June 17, 18, 19; Pan-American Medical Congress, sessions June 17, 18, 19; American Climatological and Clinical Association, sessions June 18, 19; American College of Surgeons, session June 21; Medical Society of the State of California, session June 21; American Proctologic Society, sessions June 21, 22; American Therapeutic Society, sessions June 21, 22; American Hospital Association, sessions June 21, 22, 23, 24, 25; AMERICAN MEDICAL ASSOCIATION, June 21, 22, 23, 24, 25, 26; American School Hygiene Association, June 25, 26; American Academy of Medicine, June 25, 26, 27, 28.

Warning.—Dr. Walter F. Rochelle, Jackson, Tenn., calls the attention of THE JOURNAL to the fact that a subscription swindler is operating in that district offering subscriptions to current magazines with medical books as premiums. The physicians pay cash in advance and obtain a beautifully embossed green receipt, but the books and magazines are never received. This particular subscription swindle has been previously described in THE JOURNAL.

We have also warned against certain subscription swindlers in Pennsylvania, who have now extended their work to Ohio, and who solicit subscriptions to current periodicals, including medical journals, and claim they are working for scholarships in various universities and colleges. Among the names reported to us are: George B. Watson, E. B. Huntington and F. L. Daley. Reference should be made to the editorial "Is the Physician an Easy Mark?" published in THE JOURNAL for April 10, 1915, p. 1247.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hartford (Conn.) Hospital, $1,000, the income of which is to be awarded annually as a prize to the member of the graduating class of the Training School for Nurses who attains the highest standing; $1,000, the income of which is to be used to supply delicacies for patients of the Hartford Hospital; $500 for the construction and care of recreation facilities of the Training School for Nurses; Connecticut Children's Aid Society $1,000 for the Virginia T. Smith Home, Newington; Charter Oak Private Hospital, $1,000, to be invested for the benefit of patients; Connecticut Medical Society, $1,000, the income of which is to be used for payment of dues for members unable to pay them; Connecticut Institute for the Blind, $1,000; St. Francis' Hospital and the Babies' Hospital, Hartford, each $500, by the will of Dr. Oliver C. Smith, Hartford.

St. Luke's Hospital and House of Rest for Consumptives, New York City, each $7,500; Association for Improving the Condition of the Poor, Hospital for the Ruptured and Crippled, New York City, and Mary Hitchcock Hospital, Hanover, N. H., each $5,000, and Edgewater Crèche, Fort Lee, N. J., $1,000, by the will of Miss Anna E. Smith, New York, City.

William T. Bull fund for surgical research, Columbia University, New York City, $4,000, from an anonymous donor.

Johns Hopkins' University, $50,000 in the shares of a Maryland corporation, subject to the obligation to pay to the giver the income, during the donor's life, from an anonymous donor.

University of Pennsylvania Hospital, $1,000 for the maintenance, housing and enlargement of the Social Service Branch of the Out-Patient Department, by the will of Matheus D. Colton.

Medical College of South Carolina, Charleston, $1,000, by the will of Mrs. Salina Huger.

Michigan State Board of Health, $1,000, toward the antituberculosis fund, donated by Dr. John H. Kellogg, Battle Creek.

Associated Jewish Charities of Chicago, $3,000; Michael Reese Hospital, Chicago, $1,000, by the will of Mrs. Julius Rosenthal.

Addison Gilbert Hospital, Gloucester, Mass., $115,000, by the will of Rev. Jeremiah J. Healy.

Eastern Maine General Hospital, Bangor, $80,000, by the will of Hiram P. Oliver, Bangor.

Cambridge, (Mass.) Hospital, $3,000, by the will of James J. Myers.

Malden (Mass.) Hospital, $2,500, by the will of Catherine Brown, Malden.

New York Polyclinic Medical School and Hospital, $50,000, for the endowment fund, by the will of Mrs. Anna Palmer Draper, and a donation of $10,000 from a trustee of the institution.

Hudson City Hospital, Hudson, N. Y., $25,000; Long Island College Hospital, Brooklyn, $75,000; House of St. Giles the Cripple, New York, $30,000, and Providence Hospital, Washington, D. C., $15,000, by the will of Mrs. Katherine Spencer Leavitt.

FOREIGN

Plague in Havana.—Under date of April 10 two cases of bubonic plague, with one death, are reported from Havana to the United States Public Health Service. The official bacteriologist of the Cuban government has been placed in charge of the situation.

Lectures Property of the Lecturer.—The court of appeals at Rome, Italy, has recently decided a case in a manner which harmonizes with a recent decision along the same lines in this country. It stated that notes or stenographic reports made of oral lectures cannot be reproduced and sold, not even among the limited public of the students, without the consent of the lecturer.

Monument to Lombroso.—The monument to be erected to Cesare Lombroso at Verona is the work of the sculptor Bistolfi. According to the *Policlinico*, it was to have been unveiled at the International Pellagra Congress scheduled for next October. As the congress has been postponed until 1916, the committee in charge of the monument has postponed the completion of the memorial until October, 1916. The funds for the monument were obtained by subscriptions from scientists the world around. Prof. L. Bianchi of Verona is at the head of the committee in charge.

Epidemics in Serbia.—The *Policlinico* of March 28 quotes from an article by Dr. J. Batut in a Nish paper to the effect that on the date of March 4 there were 12,000 soldiers down with epidemic diseases, including 4,157 with typhus. At the beginning of the war Serbia had 550 physicians and 65 have died since, including 43 from typhus. Fully 75 per cent. have died of all the medical men who have contracted epidemic disease there. The leader of the Holland Red Cross, who has just returned from Serbia, states that twenty-three physicians from other countries have also succumbed in Serbia to epidemic disease.

Roentgen's Seventieth Birthday.—On March 27, 1915, Prof. W. K. Roentgen's seventieth birthday was celebrated quietly by his friends, instead of the world-wide tribute that had been planned before the war broke out. His great discovery was made in 1895, while he was professor of physics at the University of Würzburg. He noticed that a fluorescent substance became luminous in the dark when it happened to be near a vacuum Hittorf tube wrapped in opaque black paper. After he had published his announcements in regard to the mysterious ray which penetrates substances proportionally to their atomic weight, he left the further research on the rays to others, and research workers of all nations have contributed to the physical, technical and medical progress in this line. Honors have been heaped on him, but, as an exchange remarks, "he disdained to exploit his discovery for his own pecuniary benefit." He has no children and his wife at present is on a sick bed. Since 1900 he has made his home at Munich, where he leads the quiet life of a professor and scientist. Unfortunately the medical profession cannot claim him.

Typhus in Serbia.—Dr. M. P. Lane of New Orleans, a Red Cross physician sent with a contingent of six doctors and twelve nurses to Serbia since the beginning of the war, who arrived in New York April 11, reports that all but four of the doctors and nurses have contracted typhus fever, Dr. Ernest P. Magruder of Washington, head of the contingent having died of the disease. Dr. Lane himself was a victim, and together with two nurses, who also contracted the disease, he was ordered home. Dr. Lane says that they found the country in the grip of recurrent fever with a high fatality and following that came typhus. Deaths were so numerous that in order to dispose of the bodies cremation was resorted to. In one day during the second week in February 450 deaths were reported from typhus in the city of Nish alone. ——George Macaulay Trevelyan, an English writer lecturing in Boston, says that through the efforts of the American and English physicians, typhus in Serbia is being checked. He has recently come from that country. Many of the

physicians who have gone to fight the disease have been attacked by it and a number of foreign physicians and nurses have died. The Serbians are grateful to the United States for their efforts to alleviate the situation. Miss E. Simmonds, a nurse from New York, who has been in the typhus stricken region, cables that help is urgently needed, especially physicians and nurses with hospital isolation equipment and disinfectors for clothing. Among the other supplies urgently needed are male catheters, test glasses, rubber gloves of assorted sizes, stethoscopes, artery forceps, scalpels, surgical saws, chloroform masks, physicians' gowns, thermometers, urinals, bedpans, sputum cups, syringes for antitoxin injections, needles, rubber rings, rubber sheeting and tooth forceps. All supplies should be sent to the American Red Cross, Bush Terminal, Brooklyn, N. Y., marked for Serbia.

WAR NOTES

Higher Pay for Surgeons.—The British war office announces that it has decided to promote all lieutenants in the Medical Corps to the rank of captain, with corresponding increase in pay, allowance and pension.

Hungarians Render Thanks.—The president of the Hungarian Red Cross has received official acknowledgment of, and warm thanks for, a recent contribution of $5,000, which has been applied to the needs of the American Red Cross Hospital in Budapest, Hungary.

Typhus in Montenegro.—An appeal has been made to the American Red Cross by the Montenegrin government for aid in coping with the typhus epidemic in that country. There is said to be a great dearth of doctors and medicine, and the governor begs the American Red Cross to send a mission with adequate supplies to Cettingje.

Ambulance Relief Corps for France.—The American Ambulance Hospital, Paris, has cabled its approval of the offer of Dartmouth College to place an American relief corps in the north of France. The plan is to affiliate the Dartmouth Ambulance Corps with the American Ambulance Hospital, Paris. Two men will be sent with each ambulance.

Contributions to War Relief Fund.—Among the larger contributions to the European war relief fund to the American Red Cross is a check for $1,135 from the Temporary Panama-Pacific Exposition Building Commission of Nebraska. The commission decided to abandon the plans to erect a Nebraska building at the exposition and voted to devote the money in its treasury to European relief work.

Bath Trains.—The Austro-Hungarian government has provided a train for bathing and sterilizing facilities, and three more are planned. The *Münchener medizinische Wochenschrift* states that the train has two cars with thirty bath tubs each, two tank cars to supply the water, two locomotives to draw the train and supply the hot water, one car for undressing, two cars for dressing, four freight cars with clean linen, etc., a sleeping car for the personnel of the train and two or three cars for the disinfection of the clothing. The arrangements permit 1,200 men in the course of ten hours to take a shower bath and have all their clothing thoroughly sterilized.

Will Fight Typhus in Serbia.—Following Dr. Richard P. Strong of Harvard University, director of the American Sanitary Commission, who sailed for South Europe March 25, the majority of the commission started their journey on April 4 on the Italian Mail Steamer *Duca d'Aosta* for Naples. The commission has been selected by, and is under the direction of, the American Red Cross and has for its main purpose the checking of the plague of typhus fever, which has had firm grasp in Serbia and Austria and which threatened to spread through the European war area. The commission also expects to find much cholera. The American Red Cross and Rockefeller Foundation have each contributed $25,000 toward the initial expenses of the enterprise, and the Serbian Relief Commission is cooperating in the raising of additional funds. More than $30,000 worth of sanitary supplies have been shipped to Dr. Strong at Saloniki, Greece. In these shipments are about 54 tons of sulphur, about $5,000 worth of cholera bacterin, large quantities of alcohol, kerosene, soap, mercuric chlorid, potassium permanganate, formaldehyd, mercurial ointment, many spray pumps, dutch oven and kettle for boiling cloths.

More Aid for Belgium.—On the American Line Steamer *St. Louis* six American Red Cross surgeons and twenty-four trained nurses sailed from New York April 18 for La Panne, Belgium, to be attached to the Belgian Red Cross for six months' service under Surgeon-General Dr. Depage, who is director of Red Cross work. These two units will be stationed at Hospital L'Ocean, La Panne. The medical men attached to the units are: First unit—Director, Dr. Albert Rotild Goodman, New York City, formerly chief surgeon of the National Railways of Mexico; first assistant, Dr. William H. Morriss, Baltimore, and second assistant, Dr. John D. Spelman, Cincinnati, Lieut., M. C., Ohio N. G. Second unit—Director, Dr. Robert W. Hinds, Buffalo, N. Y., who has been on duty since the outbreak of the war at the Women's War Relief Hospital, Paignton, England; first assistant, Dr. William T. Fitzsimons, New York City, also a member of the staff of the hospital at Paignton, and second assistant, Dr. Earl V. Morrow, Marshfield, Ore.——Dr. James E. Daniel, Greeneville, S. C., sailed for England on the *St. Louis* April 18 for duty as second assistant surgeon in in the Women's War Relief Hospital, Paignton, England.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending April 17, 1915, lists the following contributions:

Fort Wayne Medical Society, Fort Wayne, Ind.	$ 25.00
Ramsey County Medical Society, St. Paul, Minn.	25.00
The New Castle Physicians Club, New Castle, Pa.	10.00
The Harrison Co. Medical Society, Gulfport, Miss.	25.00
The Cumberland Co. Medical Society, Portland, Me.	25.00
The Waterbury Medical Association, Waterbury, Conn.	13.00
Dr. William T. Hamilton, Philadelphia, Pa.	5.00
Dr. Charles Alfred Dukes, Oakland, Cal.	5.00
Dr. P. St. L. Moncure, Norfolk, Va.	5.00
Dr. R. T. Stratton, Oakland, Cal.	5.00
Dr. R. J. E. Scott, New York, N. Y.	5.00
Dr. W. C. Cahall, Germantown, Pa.	2.75
Dr. Richard Dewey, Wauwatosa, Wis.	10.00
Dr. E. H. Ruediger, Manila, P. I.	10.00
Dr. Lucretius H. Ross, Bennington, Vt.	10.00
Mr. A. W. Burnham, Pittsburgh, Pa.	5.00
Receipts for week ending April 17	$ 185.75
Previously reported receipts	6,138.75
Total receipts	$ 6,324.50
Disbursements for week ending April 17:	
80 standard boxes of food @ $2.30	$ 184.00
Previously reported disbursements:	
1,625 standard boxes of food @ $2.20	$3,575.00
1,114 standard boxes of food @ 2.30	2,562.20
Total disbursements	$ 6,321.20
Balance	$ 3.30

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

Red Cross Quarterly Statement.—The quarterly statement of the American Red Cross gives the summary of its work from Aug. 1, 1914, to April 8, 1915. During this time the personnel sent to Europe consisted of 63 surgeons, 217 nurses and 12 members of a sanitary commission, a total of 292. This personnel is in charge of hospitals as follows: Two English units at the American Women's Hospital, Paignton, England; two French units at the hospital at Pau, France, and one French unit at the Alliance Hospital, Yvetot, France; two Russian units at the hospital at Kief, Russia; two German units at the hospitals at Gleichwitz and Kossel; two Austro-Hungarian units in hospitals at Vienna and Budapest; three Serbian units in hospitals at Belgrade; two Belgian units under the orders of Dr. Depage of the Belgian Red Cross. Three more surgeons and eight nurses are to be sent to the field hospital in France under the British Red Cross on May 1. Four more nurses have been requested for the units in Germany. The hospital at Yvetot, France, has asked for two additional surgeons and seven nurses.——Of the six surgeons and twelve nurses of the Serbian units Nos. 2 and 3, five surgeons and nine nurses have been ill with typhus fever, two cases having terminated fatally.——Dr. Ryan and one or two of the nurses of Serbian unit No. 1 have also been ill with the disease.——The funds received by the American Red Cross during this time were $1,415,032, with disbursement of $1,243,189, the chief items of which were funds transmitted for the aid of the work abroad, supplies purchased, salaries of surgeons and nurses and maintenance of the personnel. Funds have been transmitted to aid in the maintenance of the work of the American Ambulance, Paris; the American Women's Hospital at Paignton, the American Red Cross Hospital at Munich, the hospitals at Gleichwitz and Kossel, Germany, Vienna and Budapest; the Alliance Hospital, Yvetot, France; hospital at Kief, Russia; the American Relief Clearing House, Paris; the Prisoners' Bureau of the International Committee of Geneva, Belgian Relief in Holland, the Red Cross of the Netherlands, the British, French and American hospitals in Turkey, English hospital at Smyrna, hospital and relief work Beirut, Jewish relief work in Palestine, refugees' relief

in Tabriz, Prussia; Austrian and German prisoners in Siberia and the British Red Cross Intelligence Department. The American Red Cross asks for further generous contributions to maintain their humanitarian service.

CANADA

Alberta Offers Hospital.—The senate of the University of Alberta is offering the Canadian Militia Department a general hospital of 250 beds for overseas service.

The McGill Hospital Work.—On April 8 the McGill General Hospital officers mess entertained Col. E. W. Wilson and the divisional staff at dinner at the new headquarters in Montreal. Lieut. Col. H. L. Birkett presided.——The members of the nursing staff of the hospital, seventy-three in number, have finished their military training at the Quebec City Hospital and are awaiting mobilization orders.

Banquet to Toronto Physicians.—On April 8 a banquet was given in honor of Lieut. Col. P. Walter H. McKeown and Major John A. Amyot, both of whom are on the staff of the University of Toronto Base Hospital, at which about 150 of their friends were present. Dr. Dugald S. MacDougall presided and Dr. Gideon Silverhorn on behalf of those present presented the guests of honor with gold wrist watches.

Personal.—Dr. George S. Strathy, Toronto, left April 15 with the Clearing Hospital of the second Canadian Overseas Contingent.—— Captain John J. Ower, Montreal, is bacteriologist at No. 2 Canadian Stationary Hospital at Le Touquet, France.——Dr. Charles E. Doherty, superintendent of the Hospital for the Insane at New Westminster, B. C., who went to England with the first Canadian Contingent, has been appointed chief administrative officer of the Canadian Medical Service.——Dr. John R. M. Collie, Pictou, N. S., is medical officer of H. M. S. *Superb*.——Dr. Robert A. Bowie of Brockville, Ont., who went to England in December is to be attached to one of the hospitals in France.——Dr. Herbert E. Clutterbuck, Toronto, who was doing graduate work in England when the war broke out, and who joined the British army, has been appointed chief surgeon of No. 13 Base Hospital, Boulogne.——Dr. James P. Rankin, Stratford, Ont., has been nominated by the Liberals to contest the election for the House of Commons, in the riding of North Perth.——Dr. John F. Uren, Toronto, who recently underwent operation for appendicitis, has returned fully recovered.——Maj. Frank S. Patch, Montreal, has been appointed acting assistant director of medical services of the Montreal Military Division.

PARIS LETTER

PARIS, April 1, 1915.

The War

THE WAR AND PUBLIC HYGIENE

During the last session of the Conseil supérieur d'hygiène publique de France, M. Brisac, director of public hygiene under the interior department, reviewed the general condition of the public health since the beginning of hostilities, which appears, on the whole, to be satisfactory. In particular he explained to the council the arrangements made by the minister of the interior for the safeguarding of hygiene in the regions where operations of war are going on. These arrangements pertain, on the one hand, to the sanitation of the battlefields and, on the other, to the reconstruction under the best hygienic conditions possible of the buildings which have been destroyed and the towns which have been devastated. The minister of the interior has planned or organized various institutions to meet present necessities. Thus an institution for the reception and education of those who have been blinded through the war is today an accomplished fact. Schools for cripples are being organized and efforts are being made to solve, as soon as possible, the problem of those who contract tuberculosis in the war.

THE AMERICAN HOSPITAL AT NEUILLY

The newspaper *Le Temps* has just published a very eulogistic article on the American hospital at Neuilly. After describing the remarkable organization of this establishment, which may be considered "a model military hospital," the author writes: "Surprise will no doubt be felt that I do not name any of the generous organizers of this institution or of their scientific collaborators. This is in accordance with their own earnest request. They wish the enterprise to remain impersonal; it is sufficient that it is American. It maintains the traditions of the American ambulance service founded in Paris during the war of 1870."

AMPUTATION OF AN IMPORTANT PORTION OF THE BRAIN

Dr. A. Guépin, surgeon of the Péan hospital, made a report before the Académie des Sciences, March 22, on the case of a soldier who had a penetrating wound in the occipital region from which Dr. Guépin was obliged last February to extract fragments which had been driven into the left cerebral hemisphere and had caused a voluminous abscess. Twice Guépin was obliged by new abscesses to amputate a portion of brain which made a hernia outside the wound. The wounded man thus lost at least a third of his left hemisphere, yet he presented no marked trouble of motility, sensibility or even of ideation, as might have been expected from the importance of the cerebral regions destroyed.

HONOR TO THE COURAGEOUS CONDUCT OF A PHYSICIAN IN CIVIL LIFE

It would be impossible to give here the long list of military physicians who have been mentioned in army orders of the day because of distinguished actions. The government has also instituted "civil citations" for making known to the country the courageous and devoted deeds of civilians. Among these (THE JOURNAL, Nov. 28, 1914, p. 1967) was Dr. Langlet, mayor of Reims. More recently the government has mentioned the noble conduct of Dr. Wurtz, physician at Compiègne, department of the Oise, because he "was the sole physician remaining in Compiègne during the German occupation, never ceasing to give the most devoted care to nonmilitary patients and to wounded French and German soldiers, and has rendered most important services."

RAILWAY BATHS

Nature has just published an interesting article on the "railway baths" in the Russian army. During the war in Manchuria, the Russian soldiers suffered physically and morally from the suppression of the practice of steam baths, which, as is well known, are generally used in Russia. Immediately after the Russo-Japanese war, therefore, the Russian government formed a commission of physicians and engineers to solve this problem. During the first three months since the opening of hostilities, it was possible to put into service about thirty trains, which are literally bathing establishments on wheels. Each train is composed of twenty-two cars, of which the two immediately behind the locomotive serve as reservoirs for the steam produced by a supplementary boiler installed on the locomotive. Pipes lead the steam into the following cars. The first car is a dressing room. The men undress there and while they are bathing, their clothing is being cleaned, disinfected and dried in a car for that purpose. Three cars, each of which can accommodate fifty men, come next. Here, in a little alcove, the soldiers take their steam bath followed by a cold douche according to the national custom. They then pass into two cars provided with beds on which they have a right to rest for an hour. Next they pass into two dining cars, where they are given a copious meal of soup, meat and tea. In the last car, they resume possession of their uniforms and other clothing. The other cars of the train are used as kitchens and lodgings for the rather numerous staff, consisting of one commandant, two officers, two doctors, forty nurses, laundresses, cooks, etc. Each train costs about 250,000 francs ($50,000).

MEASURES AGAINST ALCOHOLISM

The chamber of deputies has passed, by 472 votes against 95, the law limiting the number of licenses for sale of alcoholic drinks. By this new law, the antialcohol associations will have the right to become civil parties in actions brought under it.

The Société de thérapeutique de Paris at its last session unanimously passed resolutions approving any measure for limiting the number of licenses and declaring (1) that the privilege of *bouilleurs de cru* (those who manufacture alcoholic drinks from their own crops) should be suppressed; (2) that every holder of a license for the sale of alcoholic drinks should be prohibited from carrying on concurrently any other business, such as the sale of groceries, tobacco or coal; (3) that a high supplementary tax should be placed on establishments which are open in the evening and also on amusement places, etc., where drink is sold; (4) that holders of licenses should be divided in two classes, (a) those who sell only drinks called hygienic, such as wine, beer and cider, which do not titrate more than the 23 degrees permitted by the Académie de médecine, and (b) those who sell drinks that titrate higher—these should be made to pay a much higher license; (5) that the law with regard to closing once a week

and to night work be strictly applied to places which sell drinks; (6) that infractions of the law against drunkenness and alcoholism be energetically repressed by officers of the law, who may be summoned to do so by the members of the antialcohol societies.

Personal

The Académie de médecine has just received word of the death of two of its correspondents, Drs. Marquez of Hyères and of Dr. Combalat of Marseilles.

Dr. Omer Marquez was born in 1822 at Neuf-Brissac and was physician at Colmar when the war of 1870 broke out. After the annexation he withdrew first to Belfort, then to Hyères.

Dr. Combalat was surgeon of the hospitals of Marseilles for thirty-four years and professor of clinical surgery at the Ecole de plein exercise de médecine et de pharmacie de Marseille for eighteen years.

BERLIN LETTER

Berlin, March 23, 1915.

Personal

Prof. M. Bernhardt, neurologist, of the Berlin university, died at the age of 70. Almost his whole life was spent in Berlin. In Berlin he studied and took the examination. From here he was called to Königsberg in 1867 through Leyden as assistant at the medical clinic. Two years later he became assistant to Professor Westphal at the nerve clinic of the Berlin Charité. In 1872 he became a member of the faculty and in 1882 was appointed professor extraordinary. His principal works were "Diseases of the Peripheral Nerves" which appeared as part of Nothnagel's collection (special pathology and therapy). A second textbook was his "Compendium of Electrodiagnosis and Electrotherapy." Of his numerous neurologic treatises, we may mention especially the contribution to the "Symptomatology and Diagnosis of Brain Tumors."

Fühner, professor extraordinary of pharmacology at Freiburg, has been appointed as successor of Professor Ellinger, (who is now working at the University of Frankfort) as director of the pharmacologic institute at Königsberg.

Privat-Docent Dr. Jussuf Ibrahim of Munich has been appointed professor extraordinary for diseases of children at Wurzburg. Ibrahim was born in Cairo. His father is the Professor Ibrahim Pasha who was for four years director of the medical college at Cairo. Ibrahim has already attended the school and university at Munich.

Privy Councilor Lentz, director of the imperial health office, has been appointed as the reporting councilor in the medical department of the ministry of the interior, as a successor of Privy Councilor Abel, whose transfer to the Institute of Hygiene at Jena I have already reported.

Meeting of the German Association for Infant Welfare

March 12, there occurred in Berlin a meeting of the German Association for the Protection of Infants which, in spite of the war, was numerously attended. The first address was delivered by the former cabinet councilor of the empress, von Behr-Pinnow, the president of the association, who has performed great service in the founding of the Empress Augusta Victoria-House for the campaign against infant mortality. The speaker, in his address, on securing the perpetuation of the nation, recommended an active campaign among the people by means of legislation and government in which the importance of families for the entire people should be regarded and families with any children should be preferred. As legislative measures, he regards the following as necessary: a housing law, a colonization movement, and national and communal preference for large families. Also in the Krankenkassen legislation, account should be taken of the size of the families so that the amount of the sick benefit shall increase with the number of children. In addition, there should be motherhood insurance, a general introduction of protective measures for mothers and infants, and imperial laws with reference to midwives, infants' homes and similar necessary conditions, in order to oppose the decline of the birth rate. To meet the cost of all these measures, he proposes a tax on bachelors and a heavier taxation on childless married persons and a taxation of intestate estates.

Dr. Rott, head physician of the Empress Augusta Victoria-House, spoke on the campaign against infant mortality. The infant mortality in the year 1914 shows an increase in a number of the large cities as compared with previous years that must be referred to the influence of the war to some extent through the sudden deterioration of economic conditions with all their disadvantages for the care and raising of children. The public charitable stations have been kept up, on the whole, while closed institutions were used to some extent as hospitals, and therefore were prevented from caring for infants.

Privy Councilor Spielhagen gave a thorough exposition of the imperial assistance in the puerperium. A comprehensive provision for care during the lying-in period has been called into existence, supported by imperial funds for the wives of soldiers and by the funds of the Krankenkassen for all women who are insured. The well-known hygienic and municipal councilor of the city of Charlottenburg, Gottstein, spoke with reference to the ordinary activity of the Krankenkassen for the care of infants. He discussed the cooperation of the Krankenkassen and of the communes as it has been developed under the influence of the war, and also its status in time of peace.

Fortunately, the official statistics just published show an increase of the birth rate for the second quarter of 1914 in comparison with previous years, but only as a result of the diminution of the death rate. There were 292,213 living births, as compared with 290,206 in the second quarter of 1913, and 290,321 in the second quarter of 1912. The increase, compared with the previous year, amounts to 2,007, or 0.2 per cent. There were 154,046 deaths, as compared with 154,931 in 1913, and 158,165 in 1912; that is at present 885, or 0.6 per cent. fewer. The excess of births over deaths amounts, according to this, to 138,167, as compared with 135,275 in 1913 and 132,156 in 1912, so that there has been an increase in the excess of births amounting to 2,892, or 2.1 per cent. The cities contribute 49,824 to this excess of births (in 1913, 50,085), and the country 88,349 (85,180). The increase is found exclusively in the open country. In the national police district of Berlin, compared with the year 1913, the births were reduced from 14,839 to 14,018. The deaths rose from 9,687 to 10,261, so that the excess of births sank from 4,972 to 3,757. Per thousand inhabitants there were on the average 27.73 live births as compared with 27.91 in 1913, and 14.62 deaths as compared with 14.91. The numerical relation of the live births has declined a trifle in spite of the increase of the absolute number, but the excess of births has risen as a result of the fall in the death rate from 13.00 to 13.11. In the cities, the excess of births amounts to only 9.80 (in 1913, 10.04); in the country, 16.19 (15.76). The reduction in mortality is, however, to be referred exclusively to the diminished infant death rate, for only 37,394 children died in the first year of life, as compared with 40,823 in the year 1913. The number of marriages has fortunately risen from 92,885 to 94,426, an increase of 1,541, or 1.7 per cent. The increase is proportionately greater in the city (48,944 as compared with 47,797) than in the country (45,944 as compared with 45,088).

Philanthropic Care of the Soldiers by the Insurance Societies of the Nation and of the City of Berlin

The insurance societies have developed a comprehensive activity for the various purposes of philanthropic care in the war. Altogether, up to the end of 1914, $1,439,025 (5,756,100 marks) had been expended for the purposes of military philanthropy. Especial contributions have been made to East Prussia and Alsace-Lorraine. In the sanatoriums, convalescent homes and hospitals, national insurance institutions and trade unions have received the wounded and nurses in large number. According to the situation, Dec. 31, 1914, the number of available beds in the tuberculosis sanatoriums was about 2,500, in the convalescent homes and hospitals, about 4,500.

The Virchow-Langenbeck Building

In the new building of the Berlin Medical Society and the German Surgical Society (Virchow-Langenbeck House) which is to be opened April 1, there is installed already the library of the Berlin Medical Society. It is the largest medical society library of the metropolis. It consists, according to the latest information, of not less than 113,163 numbers, which are distributed in the following groups: 12,958 volumes of journals, 5,958 books, 6,682 dissertations and 3,226 reprints. In addition to this, there is the legacy of the Virchow library with 12,689 and the Lassar library with 1,793 volumes and 149 bound maps with 5,000 volumes, altogether 48,501 pieces. Further, with the society are associated the libraries of some of the medical societies of this city with 20,757 volumes and the library of the German Surgical Society with 44,105 volumes.

Association News

THE SAN FRANCISCO SESSION

Preliminary Announcements of Social Events

A GOLF TOURNAMENT PROPOSED

At a recent meeting of physicians, a number of Fellows of the American Medical Association, who are golf enthusiasts, considered the formation of a golf club, to play annually at the time and place of the annual session of the American Medical Association. Members of the British Medical Association have formed such a club, and arrange similar games at the meetings of that organization; these contests have been a feature on the social program for a number of years. At the convention referred to above, a temporary organization was effected and the following tentative arrangements are announced:

The first day of play, beginning at 9 o'clock and continuing all day, will be on Monday, June 21, the day preceding the opening of the Scientific Assembly of the American Medical Association. Details of play, prizes offered, and conditions of handicaps will be forwarded in due season to those Fellows who indicate their interest in the movement by writing to the acting secretary-treasurer of the temporary organization. Two or three of the courses near San Francisco will be available. A dinner will be held at one of the golf clubs in San Francisco on the evening of Monday, June 21, when a permanent organization will be effected by the adoption of rules and by-laws and the election of officers. Those interested in such a golf club will please communicate with the acting secretary-treasurer. The temporary executive committee having in charge the arrangements for the coming meeting are: Wendell C. Phillips, Chairman, 40 West Forty-Seventh Street, New York; H. C. Moffitt, 240 Stockton Street, San Francisco; Will Walter, Secretary-Treasurer, 122 South Michigan Avenue, Chicago.

CANAL ZONE PHYSICIANS' DINNER

Dr. H. T. Summersgill announces that physicians who have been or are members of the Medical Association of the Isthmian Canal Zone are invited to join in a subscription dinner at the University Club, Powell and California streets, San Francisco, 7:15 p. m., Thursday, June 24. Those planning to attend should address Dr. Summersgill, University of California Hospital, San Francisco. Reservations must be made on or before June 19.

Marriages

WALTER EDWARD WHALEN, M.D., Ogden, Utah, to Mrs. Amelia Jane Tigert Cooper of New York City, in St. Louis, April 8.

HOWARD SPENCER BRASTED, M.D., New York City, to Miss Gladys Viola Ronald, at her country home, Ridgewood, N. J., April 5.

ELBERT MELROY HESS, M.D., Rohrsburg, Pa., to Miss Nellie Maude Keller of Fowlersville, Pa., at Bloomsburg, Pa., April 6.

EDWARD WHITNEY BODMAN, M.D., Chicago and Winnetka, Ill., to Miss Julia Lord Barry of Montclair, N. J., April 19.

BRAINARD FRANCIS CONLEY, M.D., Malden, Mass., to Miss Florence D. Byrnes of New York City, in Boston, April 4.

WALTER KLINGEMAN LONG, M.D., to Mrs. Ida M. Mitchell, both of Hampton, Ia., at Des Moines, Ia., April 6.

RALPH ELLIS LEIDY, M.D., Boyerton, Pa., to Miss Albertina Relinger of Philadelphia, at Boyerton, April 3.

WALTER CLARK HAUPT, M.D., New York City, to Miss Mary Alden Morgan of Chicago, April 20.

JOHN CHARLES GALLAGHER, M.D., to Miss Ella Marie Franey, both of Shenandoah, Pa., April 6.

RUSSELL OWEN WHARTON, M.D., St. Louis, to Miss Florence May Martin of Chicago, April 7.

FRANK DONALDSON THOMAS, M.D., to Miss Frances Pier, both of Dorranceton, Pa., April 5.

Deaths

Marshall Langton Price, M.D. University of Maryland, Baltimore, 1902; in 1910 secretary and in 1911 vice-chairman of the Section on Preventive Medicine and Public Health of the Americal Medical Association; a member of the American Public Health Association, medical officer of the Tuberculosis Commission of Maryland from 1903 to 1905, secretary of the Maryland State Board of Health from 1907 to 1913, member of the Maryland-District of Columbia Sewerage Commission in 1912, originator of the first law for the state control of tuberculosis now in effect in many states of the Union and known as the "Maryland System," who moved from Baltimore in 1914 on account of ill health to Boise, Idaho; died at sea on board the American Line Steamer *St. Paul* April 16, presumably from tuberculosis, and was buried at sea the next day, aged 36.

William Orris Mann, M.D. Boston University School of Medicine, 1892; a Fellow of the American Medical Association; from 1892 to 1897 superintendent of the State Hospital for the Insane, Westboro, Mass., and the Minnesota State Hospital for the Insane, Fergus Falls; superintendent of the Massachusetts Homeopathic Hospital, Boston, for fifteen years, and for several years in charge of the John C. Haynes Memorial Hospital for Contagious Diseases, Allston, Boston; who arranged the endowment and was the head of the Robert Dorson Evans Memorial Hospital, Boston, and in charge of the plan for the new maternity of the Massachusetts Homeopathic Hospital; died in the Massachusetts Homeopathic Hospital, April 9, from bronchopneumonia, two weeks after a surgical operation, aged 45.

James S. Irvin, M.D. University of Virginia, Charlottesville, 1893; of Danville, Va.; a Fellow of the American Medical Association and a member of the Southern Surgical and Gynecological Association; a member of the Tri-State Medical Society of the Carolinas and Virginia, and Association of Railway Surgeons; formerly president of the South Piedmont Medical Society and Danville Academy of Medicine; surgeon to the Danville General Hospital; assistant surgeon to the Southern, and Danville and Western railways; died in the General Hospital, Danville, April 10, from heart disease, aged 47.

Samuel Herbert Collins, M.D. Miami Medical College, Cincinnati, 1876; formerly president of the Lawrenceburg (Ind.) Board of Health; surgeon of the fire department and for several terms a member of the city council; inspector of the National Board of Health at Memphis, Vicksburg and Ship Island and United States port officer at New Orleans during the yellow fever epidemic of 1879; died at his home in Lawrenceburg, April 4, aged 63.

Louis Waldstein, M.D. University of Heidelberg, Germany, 1878; formerly pathologist to the German Hospital, New York City; physician to the outdoor department of Roosevelt Hospital; a member of many learned societies; well known as a pathologist and writer; who of late years has been devoting his attention to research work in London, England; died in that city; April 12, aged 61.

Leavitt S. Griswold, M.D. Detroit Medical College, 1879; a Fellow of the American Medical Association; for thirty-four years a practitioner of Big Rapids, Mich., and once mayor of the city; attending physician to Mercy Hospital, Big Rapids, and a member of the International Association of Railway Surgeons; died at his home in Big Rapids, April 4, from heart disease, aged 61.

Donnel Hughes, M.D. University of Pennsylvania, Philadelphia, 1879; a Fellow of the American Medical Association and American Association of Obstetricians and Gynecologists and a member of the Philadelphia Pediatric Society; well known as a gynecologist of Philadelphia; died at his home in that city, April 8, from pneumonia, aged 57.

Charles Ellis Ross, M.D. University of Maryland, Baltimore, 1889; a Fellow of the American Medical Association; for fifteen years a member of the medical staff of the Morganton (N. C.) State Hospital and a member of the Board of Health of Burke County; died in Grace Hospital, Morganton, April 1, from pneumonia, aged 52.

Adolph Ludwig Waechter, M.D. College of Physicians and Surgeons in the City of New York, 1899; a Fellow of the American Medical Association; for several years in charge of the Orthopedic Surgery Dispensary of the German Hospital, New York City; died at his home in New York, April 11, from pneumonia, aged 38.

George W. Harman, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1888; for seventeen years a practitioner of Missouri, and since that time a resident of Sentinel Butte, N. Dak.; died at the home of his niece, near Squaw Gap, north of Trotter, N. Dak., March 15, from pneumonia, aged 63.

William Andrew Oliver, M.D. University of Buffalo, N. Y., 1884; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; for many years a practitioner of Penn Yan, N. Y.; died in the Canandaigua (N. Y.) Hospital, April 6, aged 57.

John Austin Minish, M.D. Kentucky School of Medicine, Louisville, 1900; formerly a member of the Kentucky State Medical Association and a practitioner of Poplar Plains and Georgetown, Ky.; died at the home of his father in Gratz, Ky., March 31, after an operation for intestinal obstruction, aged 38.

Benjamin T. Burton, M.D. Willamette University, Portland, Ore., 1880; of San Francisco; aged 55; died in a hotel in Martinez, Cal., March 29, from the effects of poison, believed to have been self-administered with suicidal intent, while despondent on account of the loss of the use of his arm.

Ellery May Wing, M.D. Medical School of Maine, Brunswick, 1879; a Fellow of the American Medical Association; and censor of the Maine Medical Association; director of Somerset Hospital, Skowhegan, Me.; died at his home in North Anson, Me., April 3, from nephritis, aged 58.

George Coleman Abell, M.D. Hospital College of Medicine, Louisville, 1890; a Fellow of the American Medical Association and well known as a surgeon in the Southwest; died at his home in the Abell Sanitarium, Texarkana, Tex., April 11, from cerebrospinal meningitis, aged 54.

Alfred H. Garnett, M.D. Washington University, Baltimore, 1872; for nearly thirty years a practitioner of Colorado Springs, Colo., and chief surgeon of the Colorado Midland Railway, but for the last four years a resident of Florida; died in Jacksonville, Fla., March 27, aged 66.

Francis Manton Holly, M.D. Yale University, New Haven, Conn., 1855; surgeon in the Army during and for several years after the Civil War; founder and first president of the Greenwich (Conn.) Medical Society; died at his home in Greenwich, April 8, from pneumonia, aged 82.

Martha E. Bucknell, M.D. New England Female Medical College, Boston, 1872; for many years a practitioner of San Francisco, and said to have been the first woman to practice medicine in California; died at the home of her daughter in Los Angeles, April 5, aged 93.

William D. Patton, M.D. University Medical College, Kansas City Mo., 1901; a Fellow of the American Medical Association; formerly city physician of Amarillo and physician of Potter County, Tex.; died at his home in Amarillo, April 5, from septicemia, aged 45.

Willis Henri Philleo, M.D. New York University, New York City, 1888; a Fellow of the American Medical Association; for twenty-seven years a practitioner of the Bedford section of Brooklyn; died at his home, April 11, from acute gastritis, aged 51.

Henry C. Hollingsworth, M.D. Rush Medical College, 1864; for many years a druggist and physician of Carthage, Mo., and a member of the local school board; died at the home of his son in Pierce City, Mo., April 5, from pneumonia, aged 75.

James Guyon Clark, M.D. College of Physicians and Surgeons in the City of New York, 1845; of West New Brighton, Staten Island, N. Y.; who retired from practice in 1876; died at his home, April 9, from pulmonary edema, aged 90.

Martin M. Saucerman, M.D. Rush Medical College, 1881; a member of the Illinois State Medical Society; and a practitioner of Rock Grove, Ill., for many years; died at his home in Monroe, Wis., March 31, from bronchopneumonia, aged 71.

Clarence Heathcote Wall, M.D. College of Physicians and Surgeons, Chicago, 1904; aged 38; an ambulance physician of Chicago; died at his home in that city, April 15, from septicemia, due to an infected wound from a hypodermic needle.

George Benedict Hickok, M.D. College of Physicians and Surgeons in the City of New York, 1869; formerly a practitioner of New York City, but since 1902 a resident of Roselle Park, N. J.; died at his home in that place, April 9.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report.

Veracolate

"Veracolate (plain)," "Veracolate with Pancreatin and Pepsin" and "Veracolate with Iron, Quinine and Strychnine" are proprietary tablets marketed by the Marcy Company, Boston.

"Veracolate (plain)."—For this the following non-quantitative formula is given:

"A compound containing the bile acids, sodium glycocholate, sodium taurocholate with cascara sagrada and phenolphthalein."

The dose is three tablets. Examination in the Chemical Laboratory of the American Medical Association of a specimen of "Veracolate (plain)" indicated that there was about 20 mg. (⅓ grain) of phenolphthalein to each tablet. One dose, therefore (three tablets), would contain 1 grain of phenolphthalein—an average dose.

"Veracolate with Pepsin and Pancreatin."—The following "formula" is given for this mixture:

"Veracolate	1¼ grain
Pure Pancreatin	1 grain
Pepsin aseptic (1:3,000)	½ grain
Oil peppermint	1/10 min."

(Note the presence of two mutually incompatible digestive ferments.)

"Veracolate with Iron, Quinine and Strychnine."—This is stated to have the following "formula":

"Veracolate	1⅓ grain
Reduced Iron	1 grain
Quinine Sulphate	⅓ grain
Strychnine Sulphate	1/100 grain"

It will be noticed that these mixtures increase in complexity until a combination of seven diverse ingredients, a veritable shotgun mixture, is evolved. In none of the "formulas" are the proportions of the purgative drugs in Veracolate stated. In the second "formula," the digestants might as well be omitted, for the pancreatin is destroyed by peptic digestion and hence cannot pass the stomach while the pepsin is useless without hydrochloric acid, and, at any rate, of no value in the intestine. If one is indicated, the other is not. Yet this unscientific and complex combination of purgatives, mutually incompatible digestive ferments, and oil of peppermint is called:

"A scientific Blending of Digestive Ferments, Cholagogues and Carminatives."

". . . for all forms of indigestion and dyspepsia."

And the third, an equally irrational and complex combination, is termed "The Ideal Cholagogic Tonic"!

Extravagant and Misleading Claims.—True to type, the claims are magnified in accordance with the number of ingredients. For instance, of "Veracolate (plain)," we are told:

"Veracolate is a true cholagogue and biliary disinfectant as it *directly* stimulates the liver cells producing an increased flow of limpid bile. Although not a purgative, it moves the bowels and is definite and dependable in its action."

"The action of Veracolate is to bring about a profuse flow of healthy bile which prevents bile stasis. As the flow of bile is stimulated so antiseptic action ensues, calculi softened and the concretion and mucous eliminated. Mucosal swelling is diminished and the infection which is usually present is antagonized. Relief is in plain evidence. As a result of the treatment the skin, eyes and urine become normal in appearance in a short time, the appetite and digestion improve and soreness in the region of the gall-bladder is entirely relieved."

Similarly, it is said of "Veracolate with Pancreatin and Pepsin" that:

"It causes a natural flow of bile which checks fermentation, prevents the absorption of toxines and causes the food elements to be emulsified and thus rendered easy of assimilation. All this conduces to a natural movement of the bowels. Digestion is at once improved and the epigastric pain, nervous symptoms and headache disappear."

"Veracolate with Iron, Quinine and Strychnine" is said to be indicated in:

"Hepatic Torpor accompanied by Anemia, Chlorosis, Debility, Neurasthenia and Neuroses."

And the physician is asked to believe that it will:

". . . give gratifying results in all *nervous, anemic,* and 'run down' conditions in which the liver function is usually subnormal."

The objections to "Veracolate (plain)" are that it is semi-secret in composition, unscientific in combination and exploited under unwarranted claims. The same criticisms hold with reference to "Veracolate with Pancreatin and Pepsin" and "Veracolate with Iron, Quinine and Strychnine."

These products are discreditable to the medical and pharmaceutical profession alike and their use is against the public good.

Taurocol

The Paul Plessner Company, Detroit, places on the market Taurocol Tablets and Taurocol Compound Tablets. The company makes a pretense of giving the formula—minus any quantities—thus:

"Taurocol is a combination of bile salts, extracts of cascara sagrada, phenolphthalein and aromatics."

The "formula" given for Taurocol Compound Tablets is:

"Taurocol (Bile Salts)	Gramme	.1296
Pepsin 1-3000	"	.0324
Pancreatic Ext.	"	.0324
Extract Nux Vomica (¼ gr.)	"	.0081
Aromatics		Q. S."

A comparison of these two "formulas" with those furnished for Veracolate and Veracolate with Pancreatin and Pepsin (see preceding report) shows that they are nearly the same.

The claims made for the Taurocol preparations are essentially those made for Veracolate preparations, as instance the following, which appears on a physician's sample of Taurocol:

"For Hepatic Insufficiency, Intestinal Putrefaction, Habitual Constipation."

Likewise the following, found on a Taurocol circular, duplicates claims made for Veracolate:

". . . Directly stimulates the liver cells, producing an abundant flow of bile rich in cholates, solvent of cholesterin and a biliary antiseptic."

Taurocol is objectionable for the reasons that apply to Veracolate, and Taurocol Compound Tablets are subject to the objections that apply to Veracolate with Pepsin and Pancreatin.

THE CONVERSE TREATMENT

Another Ohio "Cure" for Epilepsy

The "Converse Treatment" for epilepsy is sold by the Converse Treatment Company of Columbus, Ohio, which is said to have for its officers Herbert E. Sanderson, president; Nathan Dawson, vice-president, and Frank J. Dawson, secretary and treasurer. As is the case with most mail-order medical concerns none of the individuals controlling the business seem to be physicians; Sanderson is a "patent medicine" maker, Nathan Dawson is said to be a lawyer, while Frank J. Dawson is apparently in the fire-insurance business. The "medical referee" of the company is given as Edgar J. Martin, M.D.

In those free and easy days when "patent medicine" makers could let their imagination run untrammeled by any considerations for truthfulness this product was known as the "Converse Cure" and was put out as "the only positive cure known, adopted and recommended by the leading physicians of the country." The epileptic was told:

"From the time of Hippocrates until the Wonderful Cure discovered by the Converse Institute, this fearful disease has been treated by the medical profession in vain."

The usual warnings against all other "cures for fits," was part of the advertising claptrap and competitors' products were condemned under the statement that they contained "zinc, silver or bromid, all of which but tend to aggravate the trouble in the long run." In those days the Converse nostrum emanated from Mount Vernon, Ohio, and, apparently was under the direct control of Mrs. Converse, who, it was claimed, "discovered" the "cure." Even after the name of the concern was changed from the "Converse Treatment Institute" to the "Converse Treatment Company" and the concern moved from Mt. Vernon to Columbus, Ohio, Martha E. Converse was, for some time, secretary and treasurer of the company. Letters written by the concern in 1910 were signed "Mrs. M. E. Converse."

When the company is written to it notifies the prospective victim that the "treatment" is put up in "packages of six bottles for $5.00." In addition there are two side-line nostrums, "Tonicine Tablets" for "restoring nerve vitality" and "enriching the blood," and "Sanderson's SixHerbs," a laxative pill.

According to the advertising matter, the Converse Treatment is "used in hospitals, sanitariums and by leading physicians." On the interesting question, Who are the leading physicians that use this nostrum, the Converse Treatment Company is silent. Some of their circulars give alleged testimonials from physicians but the names and addresses of these physicians are not given.

In 1912 THE JOURNAL published the result of an analysis of the Converse Treatment made by Prof. E. F. Ladd, the aggressive Pure Food Commissioner of North Dakota. Professor Ladd's report showed that the essential drugs in the Converse Treatment, as in practically all other treatments for epilepsy, were the bromids. More recently, in connection with the investigation of a number of "epilepsy cures," the laboratory of the American Medical Association has analyzed the "Celebrated Converse Treatment." The laboratory report follows:

CHEMISTS' REPORT[1]

Original bottles of "Converse Treatment," manufactured by the Converse Treatment Co., Columbus, Ohio, were submitted to the Chemical Laboratory for examination. Each bottle contained 165 c.c. (5½ fluidounces) of a brown liquid, having suspended extractive matter present, and with a strong odor of cinnamon. The specific gravity of the liquid at 15.6 C. was 1.1426. Qualitative tests demonstrated the presence of ammonium, calcium, sodium, potassium, chlorid and bromid. Saccharine also seemed to be present. From spectroscopic tests, lithium was not present in quantities greater than minute traces. Qualitative determinations yielded the following:

Ammonia (NH_3) (by weight)	1.13	per cent.
Calcium (Ca^{++}) (by weight)	0.88	per cent.
Potassium (K^+) (by weight)	3.74	per cent.
Sodium (Na^+) (by weight)	0.01	per cent.
Bromid (Br^-) (by weight)	13.93	per cent.
Chlorid (Cl^-) (by weight)	00.65	per cent.

Essentially each 100 c.c. of the solution contains about 7.3 gm. ammonium bromid, 5 gm. calcium bromid and 8.7 gm. potassium bromid. Calculating from the bromid determination, each dose 1 teaspoonful (1 fluidram) contains the equivalent of 14.5 grains of potassium bromid, or each daily dose (4 teaspoonfuls) corresponds to 58.0 gr. potassium bromid.

As might have been expected from the investigation of various nostrums of the same type, the "Converse Treatment" is but one more of the bromid mixtures. This, too, in spite of the fact that the exploiters of the stuff have in the past stated that epilepsy cures containing bromids "tend to aggravate the trouble in the long run."

The statement that the Converse Treatment will cure epilepsy is as false as the other statement that the nostrum is used "by leading physicians." The stuff has all the limitations and dangers of a bromid mixture. It will never cure a case of epilepsy, but, indiscriminately used by those who must be ignorant of the fact that it contains bromids, may easily result in adding to the epileptic victim's already serious condition the dangers of bromism.

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1. This is a condensed report of the chemists' findings. The details of analysis will appear in the Reports of the Chemical Laboratory of the American Medical Association for 1915.

Correspondence

Oskaloosa to the Fore

To the Editor:—I am enclosing herewith marked copy of the Oskaloosa *Times*, a weekly newspaper published in Oskaloosa, Ia. I have marked several articles which will denote the trend of public opinion in Oskaloosa. Five years ago the *Times* led the fight which resulted in the repeal of a tuberculin milk ordinance in this city on an attempt to inforce it. It would not be hard to guess on which side of such a question you would find the *Times* today.

So much for the progress of public health sentiment in Oskaloosa in five years due in a large measure to the educating influence no doubt of a municipal laboratory in charge of a competent bacteriologist who acts as full-time health officer. This was established following a disastrous typhoid epidemic in 1911. All of the three newspapers of the city carry these "Public Health Departments," thus bringing the campaign of education to all parts of the county. Incidentally the record of infectious disease in Oskaloosa has shown a decrease of practically two-thirds.

I don't think the medical profession generally appreciate just how much nerve it takes on the part of a country newspaper to throw out hundreds of dollars worth of profitable advertising simply for the public good. Many a medical journal could take a leaf from the *Times* note-book to the advantage of the profession.

J. G. ROBERTS, M.D., Oskaloosa, Ia.

[NOTE.—See Current Comment on this subject, page 1430, this issue.]

Position for Patients During Fluoroscopy

To the Editor:—In fluoroscopy of abdominal viscera rendered opaque by being filled with bismuth or barium mixtures, commonly the patient is viewed while facing the examiner. By this procedure, in obese patients or individuals in whom fluid is present in the peritoneal sac, the shadows cast on the fluorescent screen, even when the source of the rays is a Coolidge tube, are often poorly delimited.

I have found, from the examination of a considerable number of patients, that sharply outlined images of bismuth or barium filled abdominal viscera are obtained by having the subject face the tube, with his back to the fluorescent screen. This position brings nearer to the screen the stomach, colon, gall-bladder, duodenum and the kidneys. It permits of palpation during the examination practically as readily as does the ordinary anteroposterior position. It has appeared to me that frequently the duodenum was better delimited by the posteroanterior position than it was by the anteroposterior. Incisurae have sometimes been more readily distinguished, and irregularities in gastric outline better appreciated.

On account of the added distance of the opaque viscera from the tube, the images in this new position are larger than when the anteroposterior view is taken. In certain instances the spine is apt to confuse the interpretation, but with a little experience, and particularly if the Coolidge tube be used, this factor can be eliminated.

It is the routine at the Augustana Hospital to examine all patients fluoroscopically in both the anteroposterior and postero-anterior positions. We believe that not infrequently added facts of value can be obtained by the latter procedure and by the examination in the two positions.

FRANK SMITHIES, M.D., Chicago.

The Sine Qua Non.—Health is more important than education. In fact, it can scarcely be differentiated from life itself. . . . That the preservation of health should always stand first in individual and social policy is universally admitted. That neither individuals nor the public are generally realizing health values in our complex industrial democracy is only too painfully evident.—Louis W. Rapeer, "Medical Supervision of Schools," *American Education.*

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE HARRISON LAW

TREATMENT OF SEVERE CASES

To the Editor:—I notice that since March in Chicago ten persons have died from the withdrawal of morphin. Doubtless other cities will show similar results.

It must, it seems to me, be true that we have at least a limited number of patients long addicted to the use of morphin, sufferers from painful, chronic and incurable disease, broken in health and advancing age, their condition made worse no doubt by the improper use of drugs, in whom the entire withdrawal of the drug in any way would hasten death. And if entirely broken of the habit, their sufferings at times would be so great that it would seem almost impossible to refuse them a limited amount. Under the law, what can we do in these desperate cases?

J. S. W.

ANSWER.—The Harrison law does not restrict the right of the physician to prescribe or dispense morphin as he may see fit either to persons addicted to its use or to others. It only requires that a record of such transactions be made, either by the doctor in case he dispenses or by the druggist in case the doctor issues a prescription.

As an actual fact, the Harrison law will be a great boon to those physicians who attempt to cure the habitué. Heretofore it was practically impossible to manage such cases in general practice, because there was no way of controlling the patient, since the drug was always available. We repeat that this law will make it easy for physicians to do what it was utterly impossible for them to do before: successfully treat the drug habitué.

A MODIFICATION SUGGESTED

To the Editor:—I wish to suggest a modification of the Harrison Antinarcotic Act which I believe would not impair its efficiency in preventing the illegitimate use of such drugs, but which would lighten very much the clerical burdens imposed on those physicians who carry and dispense many of their remedies for acute troubles.

There are a large number of preparations put up by our manufacturing drug firms which contain enough morphin, opium, etc., to bring them under the scope of the law, but which at the same time contain such amounts of other active drugs that it would not be possible for a "dope fiend" to use them to the necessary extent without being made sick by them. Many very useful formulas, such as the various rhinitis, coryza and "brown mixture" tablets, for example, are in this class. Now it is an absolutely unnecessary hardship that the infinite detail involved in our daily work should be further increased by being compelled to make full and accurate records of the dispensing of these remedies.

I would suggest that each of the manufacturing drug firms submit to the proper government officials a list of their principal preparations which contain opium, etc., and that such of these preparations as in the judgment of the officials could not be used as "dope" be excluded from the provisions of the act so far as requiring a record of their being dispensed by physicians.

It would probably be well to retain the present regulation for ordering such preparations, and then if it were found that any physicians were ordering abnormal quantities of them the matter could be investigated.

If THE JOURNAL could induce the government to see the reasonableness of such a ruling, it would confer a great benefit on thousands of the profession.

J. S.

ANSWER.—The suggestion of our correspondent that the government officials responsible for the enforcement of the Harrison law make up a list of pharmaceutic preparations which would be exempt from the provisions of the law is hardly feasible. No officer is given the power under the law to take such action.

EUGENIC LEGISLATION

To the Editor:—1. What countries require a medical and laboratory examination of men and women previous to the issuing of a marriage certificate, and what countries require the sterilization of criminals?

2. (*a*) What states require a medical and laboratory examination of men and women previous to the issuing of a marriage certificate, and (*b*) what states require the sterilization of criminals?

3. What has been the success of these laws, and how closely have the laws been adhered to?

H. W. J.

ANSWER.—1. We find no reference to any foreign country which requires either a medical or a laboratory examination of men and women previous to the issuing of a marriage certificate, or which requires the sterilization of criminals.

2. (*a*) At present there is no state which requires women to submit to such examination prior to the issuing of a

marriage certificate, and only one state requires this of men. There are, however, several states which require of both men and women, prior to the issuing of a marriage license, a physician's certificate that neither party is infected with a transmissible disease, such as tuberculosis or any one of the venereal diseases. But these laws contain no provision in the way of requiring any kind of a specific examination. This is left entirely to the judgment of the physician. Colorado, North Dakota and Oklahoma have laws of this kind. The North Dakota law applies to men only. Wisconsin is the only state which provides specifically for a medical and laboratory examination prior to the issuing of a marriage license, and, as has been said, this measure applies only to men. At the present session of the various legislatures, several bills have been submitted to amend the existing marriage laws, to require these examinations of both men and women. Among these states are Wisconsin and Indiana. The Indiana bill was recently defeated. In Nebraska a bill was introduced modeled after the Wisconsin measure, that is, applying only to men. This, too, was defeated.

2. (*b*) Twelve states provide for the sterilization of either criminals or the feeble-minded. These states are California, Connecticut, Iowa, Indiana, Kansas, Michigan, Nevada, North Dakota, New York, New Jersey, Washington and Wisconsin. The Washington law, which is a purely criminal statute, was upheld by their supreme court in the case of *State* v. *Feilen*, ——— Wash. ———; 126 Pac. 75, while the New Jersey law, as far as it applies to epileptics, was declared unconstitutional in the case of *Smith* v. *Board* ——— N. J. ———; 88 Atl. 963, and the constitutionality of the Iowa law is now on appeal to the United States Supreme Court. See the case of *Davis* v. *Berry*, 216 Fed. 413.

3. None of these measures have been in operation long enough to justify an opinion one way or the other as to their effect. Opinion is somewhat divided as to the results of the Wisconsin marriage law. It is maintained by some that it is a salutary measure, inasmuch as it compels caution on the part of those who are about to marry, while others urge that what might seem to be caution, as evidenced by the decrease in marriages, is nothing more or less than proof that the law is disregarded by either the common law form of marriage or by marriages outside the state, or by means of perjury on the part of both the man and woman and the physician. But this decrease in the number of marriages is only nominal, and hence no very definite conclusion can be drawn from it. The same things may be said of the sterilization laws, that is, that they have not been long enough in force to warrant definite conclusions. It has been asserted that the California measure is a success. This was likewise true of Indiana, until that measure was placed in abeyance by order of former Governor Marshall. The success of any of these laws may be questioned, however, as no efficient and thorough follow-up system has been shown to have been adopted. Moreover, it would require more than two or three years to determine the true success of sterilization. What may seem an apparent benefit to the patient in the first few years after the operation may be contraindicated by untoward conditions thereafter.

DISSEMINATION OF SCARLET FEVER

To the Editor:—In the Therapeutics Department (THE JOURNAL, March 27, 1915, p. 1073) the statement is made that the contagion of scarlet fever is through the buccal and nasal secretions and not from the desquamating skin. If this be true, the custom of lifting quarantine at the termination of desquamation is based on erroneous ideas. If so, why has the practice been so successful in stamping out local epidemics? Why quarantine at all more than against typhoid, tuberculosis or any other disease whose source of contagion is definitely known? Would not the proper care of secretions of the mouth and nose be sufficient to eliminate contagion? GEORGE R. TUBBS, M.D., West Point, Ind.

ANSWER.—While it is not demonstrated experimentally that there never is any chance of contagion from the scales of a scarlet fever patient, the experience of recent years is that the disease is conveyed principally by the secretions of the throat, nose and ears. Of course it stands to reason that, such being the case, cutaneous scales of themselves harmless readily may become contaminated by discharge from the throat, nose and ears. The termination of quarantine should be determined by the condition of the patient's nasopharynx and ears. If the patient, after the customary period of quarantine, shows no abnormal conditions in the throat, nose or ears, the quarantine can be raised; but if inflammation of any of these parts persists, quarantine should be continued until normal conditions are restored. It is accepted generally that a person who has passed through an attack of scarlet fever remains a source of danger to the susceptible so long as the tonsils, throat, nose or ears are not fully restored to the normal state. In most cases this takes place by the time scaling is finished, but sometimes it takes longer.

SPASMOPHILIC AND EXUDATIVE DIATHESIS

To the Editor:—Will you please give me definitions of the terms "spasmophilic" and "exudative diathesis"?

W. SLAVE, PH.D., Chicago.

ANSWER.—The terms "spasmophilic" and "exudative" are not synonymous, but refer to two widely divergent conditions characterized about as follows:

The term "spasmophilic diathesis" (spasmophilia, tetany) is a condition of infants and young children characterized by a hyperexcitability of the central nervous system. This manifests itself in heightened reactions to mechanical and electrical stimulation, and by a tendency to laryngismus stridulus, carpopedal spasm and convulsions. The mechanical hyperexcitability is readily determined by tapping the branches of the facial nerves over the cheek. If positive, there is a twitchi..g of the muscles supplied. This is known as Chvostek's sign. The electrical hyperexcitability is tested for with the galvanic current. The so-called Erb's phenomenon is a cathodal opening current contraction with less than a 5-milliampere current. Trousseau's sign is elicited by constricting the arm; the fingers then take on the obstetric position, the hand is flexed at the wrist; in other words, the same position that is obtained in the more severe cases in which the carpopedal spasm appears without this pressure. The condition spasmophilia is usually associated with rachitis.

The following is a list of recent articles on this subject:

Gebhardt, H.: Electrical Demonstration of Spasmophilia in Cases of So-Called Initial Convulsions in Children, *Monatschr. f. Kinderh.*, xiii, No. 6.
Reye, H.: Spasmophilia, *Arch. Pediat.*, September, 1914.
Freudenberg, E., and Klocman, L.: Spasmophilia, *Jahrb. f. Kinderh.*, June, 1914.
Aschenheim, E.: Connection Between Rachitis and Spasmophilia, *Jahrb. f. Kinderh.*, April, 1914.
Sedgwick, J. P.: Spasmophilia with Special Reference to Familial Reaction and Repeated Absences: Report of Sixteen Cases, *Am. Jour. Dis. Child.*, February, 1914.
Rowe, O. W.: Spasmophilic Diathesis, *Wisconsin Med. Jour.*, December, 1913.
Iwamura, K.: Spasmophilia in Japan, *Ztschr. f. Kinderh.*, ix, No. 2.
Thorspecken, O.: Spasmophilia in Children, *Med. Klin.*, June 29, 1913; abstr., THE JOURNAL, Aug. 9, 1913, p. 442.
Freulenberg, E., and Klocman, L.: The Spasmophilia Problem, *Jahrb. f. Kinderh.*, July, 1913.
Rosenstern, I.: Congenital Debility and Spasmophilic Diathesis, *Ztschr. f. Kinderh.*, viii, No. 2.

The term "exudative diathesis" is one that was introduced by Czerny some years ago to define more properly that large group of infants that shows a tendency to exudation of the skin in the form of eczema, lichen urticatus, urticaria, cradlecap, and a tendency to repeated catarrhal infections of the upper respiratory tract. The underlying difficulty he ascribes to an error in the metabolism of the fat. He divides the cases into the fat and the lean, the one class gaining excessively in weight, the other showing practically no gain or a loss in weight.

Below is a suggestive list of articles on this subject:

Czerny, A.: *Monatschr. f. Kinderh.*, 1905, iv, 1.
Czerny, A.: *Monatschr. f. Kinderh.*, 1907, vi, 1.
Lifschütz, A. K.: Eosinophilia and the Exudative Diathesis, *Monatschr. f. Kinderh.*, xii, No. 10.
Aschenheim, E.: Eosinophilia Not a Symptom of the Exudative Diathesis, *Ztschr. f. Kinderh.*, x, Nos. 5 and 6.
Putzig, H.: Eosinophilia a Symptom of the Exudative Diathesis, *Ztschr. f. Kinderh.*, x, Nos. 5 and 6.
Putzig, H.: Eosinophilia in Infants a Symptom of the Exudative Diathesis, *Ztschr. f. Kinderh.*, ix, No. 6.
Rachmilewitsch, E.: The Skin Reactions in the Exudative Diathesis, *Jahrb. f. Kinderh.*, February, 1913.
Beck, C.: Manifestations of the Exudative Diathesis in the Mucosa of the Urogenital Apparatus, Forty Cases, *Monatschr. f. Kinderh.*, xi, No. 10.
Benfey, A.: Eosinophilia in the Exudative Diathesis, *Monatschr. f. Kinderh.*, xi, No. 9.
Aschenheim, E.: Significance of Eosinophilia with the Exudative Diathesis, *Monatschr. f. Kinderh.*, xi, No. 6.
Schkarin, A.: Eczema as an Expression of the Exudative Diathesis in Infants, *Jahrb. f. Kinderh.*, August, 1913.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, May 11-12. Sec., Dr. W. S. Stewart, Citizens Bank Bldg., Pine Bluff. Homeopathic: Little Rock, May 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic: Little Rock, May 13. Sec., Dr. C. E. Laws, 712 Garrison Ave., Fort Smith.

GEORGIA: Atlanta and Augusta, June 2-4. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, May 13-15. Sec., Dr. C. St. Clair Drake, Springfield, Ill.

LOUISIANA: Homeopathic, New Orleans, May 3. Pres., Dr. C. R. Mayer, 919 St. Charles St., New Orleans.

LOUISIANA: New Orleans, June 3-5. Sec., Dr. E. L. Leckert, 716 Machea Bldg., New Orleans.

MASSACHUSETTS: Boston, May 11-13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MICHIGAN: Detroit, May 27-29. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

NEVADA: Carson City, May 3. Sec., Dr. S. L. Lee, Carson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 25-28. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

TENNESSEE: Knoxville, Memphis and Nashville, May 3. Sec., Dr. A. B. DeLoach, 426 Scimitar Bldg., Memphis.

Maryland December Report

Dr. J. McP. Scott, secretary of the State Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, Dec. 8, 1914. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 37, of whom 26 passed and 9 failed. Two candidates were licensed as the result of a special examination. Nine candidates were licensed through reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Baltimore Medical College	(1913)	80
College of P. and S., Baltimore	(1912) 78; (1914) 75, 77, 78, 84, 87	
Johns Hopkins University	(1913) 84, 89; (1914)	75, 80
Maryland Medical College	(1912)	76, 79
University of Maryland	(1914) 75, 77, 80, 82, 82, 83, 83, 86, 86, 86	
Jefferson Medical College	(1914)	90
University of Pennsylvania	(1900) 86; (1913)	84

FAILED		Number Examined
Howard University	(1914)	1
Bennett Medical College	(1914)	1
University of Louisville	(1912)	1
College of Phys. and Surgs., Baltimore	(1914)	1*
Maryland Medical College	(1912, 2) (1913, 2)	4
Medical College of Virginia	(1914)	1

LICENSED BY SPECIAL EXAMINATION		
College of P. and S., in the City of N. Y.	(1895) (1903)	2

* Did not complete examination.

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Baltimore Medical College		(1906)	Penna.
College of Phys. and Surgs., Baltimore		(1909)	W. Virginia
Johns Hopkins University		(1904)	Penna.
Maryland Medical College		(1905)	W. Virginia
University of Maryland		(1914)	N. Carolina
Woman's Medical College of Baltimore		(1897)	W. Virginia
Jefferson Medical College		(1910)	Penna.
University of Toronto		(1904)	Penna.
McGill University		(1902)	Louisiana

Pregnancy and the Italian Earthquake.—Pestalozza has reported his experiences with forty and Resnevic with twenty-four women in advanced pregnancy brought to the maternities at Rome from the earthquake district. A number had been buried under the ruins for hours but they were delivered at normal term with no signs of injury of the child, not even in one case in which the pubis had been fractured, with considerable displacement of the fragments. Only two of the women were delivered prematurely in the maternity, the fetus in both having evidently succumbed to acute asphyxia while the mother lay in a swoon for hours under the ruins. All the other women are doing well, Nature evidently being able to carry the fetus safely through such a catastrophe.—*Clinica Ostetrica*, 1915, xvii, 50.

Book Notices

A LABORATORY MANUAL OF QUALITATIVE CHEMICAL ANALYSIS FOR STUDENTS OF MEDICINE, DENTISTRY AND PHARMACY. By A. R. Bliss, Jr., Ph.G., Ph.C., M.A., Professor of Chemistry, Birmingham Medical College. Cloth. Price, $2 net. Pp. 244. Philadelphia: W. B. Saunders Company, 1914.

Professor Bliss' Manual of Qualitative Chemical Analysis is neatly bound, well printed, and altogether very satisfactory as a "book." But as a "qualitative analysis" it is a disappointment—a disappointment because the subject-matter is not presented in the light of modern chemistry and contains many inaccuracies. In fact, this book cannot be termed a contribution to the study of chemistry, but rather a desire to label one's own name on a collection of well-known and, in some instances, archaic methods of qualitative tests. Incorporation of the tables of the U. S. P. preparations containing the elements discussed in Professor Bliss' book cannot be considered an important addition.

Medical students in qualitative analysis should be familiar with certain theories, such as the law of mass action applied to ionization, etc., in order to appreciate its value and service in the correct method of analysis. Professor Bliss gives only a few paragraphs to this subject, and these are poorly constructed and contain gross errors. As instance of a lack of applied theory, such misstatements as the following appear in the methods: "Ammonium hydroxide produces manganous hydroxide, except in the presence of ammonium salts, because of the formation of a double salt, for example $(NH_4)_2Mn(SO_4)_2$" (page 100). Of course the precipitation of manganous hydroxid is hindered, not because of the double salt formation, but because the large concentration of ammonium ion represses the concentration of the hydroxyl ion; hence,

$$[Mn^{++}] \times [\overline{OH}]^2 \text{ is less than } K_{\substack{\text{Ion product constant for} \\ Mn(OH)_2}}$$

A similar misstatement appears about magnesium (page 142). Also, on page 102, a serious error occurs: "Ammonium hydroxide produces a white precipitate of zinc hydroxide, soluble in excess of the precipitant forming ammonium zincate $(NH_4)_2ZnO_2$." This is obviously not true because (1) if free ammonia is present the positive complex zinc ammonium ion $[Zn(NH_3)_4^{++}]$ is produced, and (2) the salt of a weak base and weak acid such as ammonium zincate would be decomposed in solution. Here is a gem of nondescription: "The official sulphurous acid is a colorless liquid having a sulphurous odor and an acid sulphurous taste" (p. 166). The "workability" of some of the schemes of analysis is quite questionable. Summed up, this book is hardly a scientific treatise.

CANCER, ITS CAUSE AND TREATMENT. By L. Duncan Bulkley, A.M., M.D., Senior Physician the New York Skin and Cancer Hospital. Cloth. Price, $1.50. Pp. 230. New York: Paul B. Hoeber, 1915.

This monograph has apparently the single purpose of emphasizing the influence of a meat or high protein diet in the causation of cancer. The author has no experimental evidence to appeal to, but aims to show that cancer is not a contagious disease, not caused by a micro-organism, and that while there is some reason to believe in the influence of "embryonic rests," they are of themselves insufficient to explain its origin. The fact that cancer is increasing in civilized communities is paralleled by the fact of the increasing luxury and consumption of protein food. While these aspects of the disease are interestingly set forth, the author does not appear to have been able to bring any decisive proof of a causative relation. He therefore advocates a vegetarian diet and a regulation of the bowels with a view to the prevention of autointoxication. There is, however, very little detail as to the medicinal treatment. He employs thyroid extract. A number of cases of breast tumors which have disappeared under this method of treatment are reported. In none of them is the diagnosis verified by microscopic examination; hence, these cases present only presumptive evidence of the value of the treatment. In a number of

the cases which Dr. Bulkley has placed under medical treatment it has been deemed advisable, for one reason or another, to resort to surgical measures. He also reports some cases of recurrent carcinoma. In these cases Roentgen-ray treatment was added to the dietetic and medicinal, so that it can hardly be said that the improvement was proved to be due to those measures. In none of these cases has a final result been reached. The cases are reported as still under observation. It would appear, from a careful examination of the statements of the author, that the influence of the protein diet in the causation of cancer is not proved and that his records of treatment show very little evidence of the efficacy of diet in the treatment of this disease.

THE CHEMICAL EXAMINATION OF WATER, SEWAGE, FOODS AND OTHER SUBSTANCES. By J. E. Purvis, M.A., University Lecturer in Chemistry and Physics as Applied to Hygiene and Public Health, and T. R. Hodgson, M.A., Public Analyst for the County Boroughs of Blackpool and Wallasey. Cloth. Price, $2.75 net. Pp. 228. New York: G. P. Putnam's Sons, 1914.

This book deals almost exclusively with methods and does not discuss interpretations of results or relative health values. There are some deviations from the best American practice, as the retention in water and sewage analyses of the somewhat old-fashioned method of recording by parts per hundred thousand instead of parts per million. The bacterial examination of sewage is dealt with very briefly, but that of water is not touched on. We notice on page 81 the sweeping statement that "no healthy, properly fed cow will produce milk containing as little as 3 per cent. fat." On page 139 an attempt is made to describe the microscopic appearance of the commercial starches. Figures would be better as an aid to differentiation. Considering the book as a whole, its chief value seems to lie in bringing together in compact and clear form a number of familiar and well-tested methods employed in public health laboratories. It should prove a useful supplement to the larger books that deal more extensively with special features.

FLIES IN RELATION TO DISEASE. Bloodsucking Flies. By Edward Hindle, B.A., Ph.D., Assistant to the Quick Professor of Biology, Cambridge. Cloth. Price, $3.75. Pp. 398, with 88 illustrations. New York: G. P. Putnam's Sons, 1914.

The past two decades will long be famous in medical history for epoch-making discoveries of the relations of insects to disease. From the discovery of the malarial parasite by Laveran in 1881, and the demonstration of its life cycle fourteen years later by Ross; from the earliest direct association of flies with disease in the same year by Finlay, and the proof of their causation of yellow fever by Reed, Lazear, Carroll and Agramonte in 1899 to the present time, there has been an ever-increasing volume of literature, till it has far exceeded the limitations of the average physician. The impetus which the discoveries by Ross and the American commission of 1899 have given, not only to clinical and pathologic studies, but to parasitologic and entomologic studies as well, has been tremendous. More has been learned about the habits and structure of filariae, plasmodia and trypanosomes, about mosquitoes, tsetse flies and the various other infecting "bugs" within these years, than in all the preceding. Thirty years ago, for instance, scarcely a hundred species of mosquitoes were known throughout the world; now their numbers have been increased manyfold, and their catalog is still far from complete. Physicians and perhaps entomologists and parasitologists will welcome any trustworthy inventory of our present knowledge, any summary that will enable them to keep even moderate pace with the many discoveries of recent years. Hindle's book is such a summary, and it may be commended from both the entomologic and the medical points of view. The author's main object has been "to collocate the most important observations concerning the part taken by biting flies in the transmission of disease, including notes on the classification of the flies concerned, and descriptions of the infections transmitted, but no attempt has been made to give any account of the clinical symptoms of the various diseases, whether of man or animals." The book includes a summary of the structure, habits and classification of biting and allied flies—mosquitoes, stable flies, tsetse flies, horse flies and moth flies; of the various transmitted parasites and their life cycles, modes of infection, etc., together with brief histories of the discoveries and the distribution of both diseases and insects. The larger part of the work is devoted to mosquitoes, malaria and yellow fever, but other flies, sleeping sickness, dengue, elephantiasis, surra, pappataci fever, etc., are treated more or less at length, though only a brief note is given of verruga peruviana. Those portions dealing with the classification and structure of the biting flies is largely a compilation from standard authorities, but the work has been carefully done, with fewer errors than might be anticipated. The physician, however, must not expect by the aid of this book alone to become quickly an expert in the recognition of these insect pests. The subject is too abstruse for that. With the aid of a few samples, which the physician may obtain from various sources, and of some additional literature on the subject, he may, with a little exertion, become so far acquainted with the chief kinds of parasitic insects that his services to the community in which he lives will be greatly enhanced. It is desirable that every general practitioner of medicine should be able to distinguish the chief disease-bearing insects of the region in which he lives, and to know something of their habits also. Certainly the national authorities can render no greater service than by aiding him in acquiring that acquaintance.

THE INDIVIDUAL DELINQUENT. A Text-Book of Diagnosis and Prognosis for All Concerned in Understanding Offenders. By William Healy, A.B., M.D., Director of the Psychopathic Institute, Juvenile Court, Chicago. Cloth. Price, $5 net. Pp. 830. Boston: Little, Brown & Co., 1915.

We have innumerable surveys of criminology, different theories of criminal law and many statistics leading to general explanations, all concerning chiefly external and anthropometric details. The introduction of psychologic tests for the estimation of the mental potential has revolutionized the methods applied to the study of the individual delinquent. The work of Dr. Healy is perhaps the first successful study of the individual leading to a clear understanding and scientific treatment. The author is not inclined to put delinquents as such in the list of abnormal individuals. He points out methods of procedure for the adequate study of a delinquent, and lays especial stress on the psychologic method. The concrete studies, with expositions of groups and types, deserve special attention.

"Anthropology, the science of man," says Dr. Healy, must be ever growing with the growth of human knowledge, and cannot be held by the limitations of set opinions." Facts ascertained by the study of the individual readily overthrow the set theories of anthropologic conceptions. The point of view of the author is "to ascertain from the actualities of life the basic factors of disordered social conduct." He would like to term much of his study "characterology." "As students of character, we are dealing with motives, with the driving forces of human conduct, and since conduct is directly a production of mental life, we occasionally become involved in individual and differential psychology." To repeat, the dynamic center of the whole problem of delinquency and crime (the terms "delinquency" and "crime" are always used by the author synonymously) will ever be the individual offender.

Dr. Healy chooses the intimate study of young offenders for the reason that such a study would establish a better understanding of the types of older offenders. "Man is but a child with but a little larger growth, and genetic fundamentals are the logical forebears of etiology and diagnosis in later years." Another motive for research into the beginnings and causative factors is the opportunity for the establishment of scientific laws of predictability on which all sorts of treatment could be rationally planned. The work of Dr. Healy is divided into two books, the first one containing chapters on the individual, the mental basis of delinquency, working methods, statistics, and treatment; the second, cases, types and causative factors. The whole field

of abnormal mental reactions is thoroughly gone over and the large number of his cases illustrating these are a marvel of conciseness, completeness and lucidity of detail. Appended to the two books is a most complete bibliography and an article on the organization of the Juvenile Psychopathic Hospital. This book has opened a way for every earnest student of this subject to follow.

Gonorrhea and Its Complications in the Male and Female. By David Watson, M.B., C.M., Lecturer on Venereal Diseases to the University of Glasgow. Cloth. Price, $3.75 net. Pp. 375, with 84 illustrations. New York: Paul B. Hoeber, 1915.

In spite of the fact that the gonococcus occupies a position of the "very first rank as a cause of ill health and disability," the subject of gonorrhea in its entirety is seldom given due consideration. In this book every phase of the subject, from bacteriology to urethroscopy, and from the simplest to the most complicated infections in the male or female, has been carefully and instructively compiled. With the authors on the continent, it is interesting to read, the preference in the treatment of gonorrhea is the grand "lavation" method. Important references are incorporated in the work and are balanced by the author's own opinions and observations. For a "latest" book, there is unpardonable brevity in the discussion of vaccine and serum therapy, so that no definite conclusion can be formed as to its value.

Medicolegal

Privileged Communication Under Amended Statute

(Armstrong vs. Topeka Railway Co. (Kan.), 144 Pac. R. 847)

The Supreme Court of Kansas reverses a judgment obtained by the plaintiff, a physician, for damages resulting from personal injuries which he alleged he sustained through the negligent operation of one of the defendant's street cars, the case being remanded for a new trial. This the court does because of what it deems was error in the rejection of the defendant's offers to show by physicians who were present when another physician made his examination of the plaintiff, and by other physicians, the history of the accident to the plaintiff as they had received it from him. The court holds that, under the facts of the case, the plaintiff, who was attended by a number of physicians, waived his right to have his communications to them respecting the manner and circumstances of his injury regarded as privileged, and, further, that since he waived his privilege it no longer exists and will not be a factor in subsequent proceedings in the case.

Section 323 of the Code of Civil Procedure of Kansas of 1901, relating to privileged communications to physicians and surgeons with reference to physical disease, was amended in 1909 to include communications respecting physical defects and injuries, and the time, manner, and circumstances under which ailments were incurred. The time, manner and circumstances of a street car accident are not confidential facts. There is no secrecy, or intimacy, or privacy about them, and nothing a legislature can do can change their actual character. It may be assumed, however, that the legislature may arbitrarily classify them with confidential matters with which they may be associated. The court will not assume that the legislature added the time, manner and circumstances of personal injuries to the exemptions contained in the old law for the purpose of fostering any damage suit industry, or for the purpose of gratifying the desires of members of the medical profession to keep their relations with patients free from the probe of judicial inquiry. On the other hand, it will be assumed that the amendment was made in the same spirit in which the original statute was conceived; that is, for the protection of genuinely confidential matters.

A physician may testify to confidential communications with the consent of his patient. The giving of testimony by the patient without objection is by statute made the equivalent of consent that the physician may testify to the same subject-matter, whether the patient be willing in fact or not. Besides this statutory consent, consent may be express, as, for example, by contract. Consent may also be implied. It is implied from failure to make objection when the physician is called on to testify, assuming that the patient has opportunity to make objection.

The court is of the opinion that the statute does not contemplate that waiver follows from the mere fact that the patient himself testifies to his physical condition and to the manner and circumstances of his injury. In doing so he need not disclose confidential communications to his physician, and, if he do not, the communications are still privileged. Cases may also arise in which breaking the seal of confidence as to a single physician will not waive the privilege as to others.

Unfavorable Results from Efforts to Save Foot

(Miller vs. Toles (Mich.), 150 N. W. R. 118)

The Supreme Court of Michigan holds that a verdict was properly directed in favor of the defendant, a surgeon sued for alleged malpractice. The court says that the plaintiff was injured as the result of a fall from a scaffold on Aug. 24, 1909, his ankle being badly sprained and perhaps otherwise injured. He was treated by four different physicians, one after the other, until Nov. 19, 1910, when the ankle had assumed such a condition that the attending physician suggested that the case was one which demanded surgical rather than medical treatment, and the defendant was called in consultation. As a result of the consultation, it was determined by the defendant to attempt to save the foot and ankle by the use of what was called the "Murphy Treatment," consisting in the injection of a solution the nature of which was not disclosed by the record. The first injection was administered November 20, the second December 3, and the third Dec. 30, 1910. At the time the first injection was administered, the plaintiff's temperature was about 102, indicating, probably, that the diseased condition of the ankle was causing a serious constitutional disturbance. As a result of the injections, the high temperature subsided. After each injection, however, the plaintiff suffered severe pain, which lasted from one to three days, requiring the administration of opiates for its relief. No marked improvement followed the use of the injection, and, on Feb. 14, 1911, it was determined to undertake an exploratory operation, which was performed. There was no expert testimony as to the condition in which the bones of the ankle were found, but the plaintiff testified that he was assured by the defendant that they were all right and that a complete cure would follow. However, the ankle did not improve, but continued to grow markedly worse, until, on Aug. 7, 1912, the plaintiff's condition became so alarming, his temperature having risen to about 104, that it was obvious an amputation must be resorted or he would certainly die. The foot was therefore, on that date, cut off. The court thinks it obvious from an examination of the record that at the time the defendant was called the ankle was in an extremely serious condition. It was in such a condition as, in the opinion of his attending physician, demanded amputation. Under these circumstances the defendant tried a remedy which appeared to have been known and approved by the profession, though perhaps not generally, and which in some instances of diseased joints had achieved remarkable results. Inasmuch as the only alternative at that time was immediate amputation, it would be a strange application of the law which would hold the defendant responsible for its failure. In treating a broken or diseased limb, the implied contract between the surgeon and patient is not to restore it to its natural condition, but to use that degree of diligence and skill which is ordinarily possessed by the average of the members of the profession in similar localities, giving due consideration to the state of the art at the time. The court does not agree with the contention of the plaintiff that, having laid before the jury the facts surrounding the injury, the subsequent treatment, and the ultimate loss of the limb, the jury, in absence of testimony of an expert character tending to show malpractice, should be permitted to draw inferences of negligent conduct on the part of the defendant.

Miscellany

Fighting Rocky Mountain Spotted Fever

The work for 1915 of eradicating the spotted fever tick from infested regions in Montana has been begun by the Public Health Service and the Montana State Board of Entomology. Dr. L. D. Fricks, who conducted investigations and aided in devising means for ridding the state of the tick in the Bitter Root Valley, has arrived in Montana and will make his headquarters at Victor for the summer. The plan of the Public Health Service and the state authorities is to continue to wage war on the tick, and as a means to this end the various measures that have been found to be effective, hand picking of domestic animals, dipping, sheep grazing and the destruction of small rodents, will all be employed. Before the weather warms sufficiently to permit dipping, hand picking will be advised for all stock owners. Sheep grazing was found in 1914 to be the most effective and economical means of getting rid of the ticks, practically 85 per cent. of the ticks picked up by the sheep dying in the wool. The fat in the wool seems to be the destructive agent. Dr. Fricks believes that the extensive grazing of sheep on the west side of the valley, the area now almost exclusively infested, would soon eradicate the ticks and consequently the fever. Sheep have been extensively grazed on the east side for years, and this he believes accounts for the freedom of that area from the fever ticks. It has been found that only about 1 in 100 ticks is infected, and this accounts for the fact that many persons bitten by ticks do not develop the disease. As a precaution it is advised that persons living in the infested territory should search their bodies frequently for the ticks, and that parents should exercise the strictest diligence with their children to keep them free from ticks. The government investigators strip and examine themselves and their clothing every two hours while working in tick territory. It is found that it takes a tick about two hours to become attached to the body and leave the infection. It is advised that tick bites be cauterized with pure phenol (carbolic acid) on a wooden toothpick. The immature ticks attach themselves to gophers, ground squirrels and other small rodents, but the mature ticks attach themselves to the large domestic animals. Poisoned grain will be furnished to kill the small wild animals which harbor ticks.

THROWING THE SAME OLD SCARE.
From *Puck*—(by permission).

Maggot Trap for Fly Prevention

In view of the imminence of summer and the approaching fly season, a bulletin of the U. S. Department of Agriculture on the construction of a maggot trap for fly prevention is of interest. Flies breed very largely in manure, and this is the most frequent source of flies about habitations. It has been found that the fly at about the end of the larval stage, when the insects are about to enter the pupa or chrysalis stage, have a pronounced tendency to migrate, and this migrating stage is taken advantage of to trap the immature flies. To do this the manure is placed in a receptacle with a lattice work bottom, beneath which is placed a concrete basin connected by a drain pipe with a small concrete cistern. The bottom of the basin is covered with water, into which the maggots, as they migrate, fall and are drowned. At frequent intervals the water is drained off into the cistern and is again pumped over the manure so that none of its contents are wasted. The expense of this sort of trap is said to be no greater than that of various other methods of screening houses and stables, manure bins, etc., to eliminate the fly nuisance. It has been estimated from experiments that in warm weather the trap will get rid of 99 per cent. of the flies in the manure.

Fee-Splitting

What is fee-splitting? It is the buying and selling of patients. The public knows little of this naughtiness. Even if you explain, they see little wrong. Fee-splitting is the custom at times of the merchant, the shop-keeper, the clergyman, the lawyer, the farmer and the mechanic. Obviously, it means a commission, a bonus, or a "rake-off" for the good will, the good word, or the friendly act of a fellow-craftsman. But fee-splitting in ordinary business is a mild offense, or no offense at all, and differs from medico-surgical fee-splitting in this—that in ordinary business the customer is not necessarily made to suffer, because there is commonly a recognized fixed charge for commodities and for service. The customer knows this and counts on the inevitable profit for the middleman. If a farmer can produce eggs for 15 cents a dozen, and if the customer pays the grocer 30 cents a dozen, there is no secret connivance anywhere in the transaction. Thirty cents is the market price, and the customer knows that the 15 cents profit is somewhere properly divided between the farmer and the intervening grocer. The same rule is recognized as proper and true of other commodities. The public, knowing the market prices, expect they must allow for reasonable profits, and must pay more than the cost of production. Medicosurgical fee-splitting is another matter and occupies a bad eminence peculiarly its own. It is graft; it is blackmail by the general practitioner; it is bribery by the guilty surgeon. Through such transactions the unscrupulous surgeon buys his patient from the unscrupulous family doctor as surely as he buys flour from the grocer, *Fiat justitia, ruat coelum*. Again, let us scan our ethics, and let the crusade advance.—James G. Mumford, *Clifton Med. Bull.*

Parental Superstition

Parental superstition is not more foolish, more common, or more remarkable than any other kind, but it has worse effects. It does not matter to A if B does or does not walk under a ladder, or waves saline sacrifice to an unknown deity after spilling salt, but it makes a great

difference to the health and happiness of children if they are prevented from obtaining suitable treatment because their parents choose to believe one or other impossible superstition. Medical men come across many of these absurd and injurious beliefs, all of which are backed up by clinical evidence of the post hoc propter hoc sort, which have to be carefully dealt with, or faith in the medical adviser is lost and another client gained for the patent medicine men. Quite well educated people believe that the bacillus of tetanus will only willingly make its home in a cut between two of the digits, and that its special seat of election is between the thumb and the first finger. We are often told that to stop an otorrhea will bring on "fits." This is probably because it is held that there is danger in plugging the ear. Impetigo contagiosa is constantly put down to eating unripe fruit, and there is a very prevalent idea that children will outgrow their defects in their seventh year. The existence of the "comforter" still goes on with its toll of infant lives, and will probably continue. We give too much credit to Nature. We think that because a woman is a mother she is fit to be one. We never made a greater mistake. It is hard to convince the average female adult of this when she has arrived at what she considers the age of discretion. We must catch her young. At school she must be taught to know, at any rate, that she does not know everything. Once that is realized she may be willing to learn, and if she is, we will find that the terrible figures of infantile mortality will come down with a run.—*Medical Press and Circular.*

Americans in Turkey

According to a recent bulletin of the American Board of Foreign Missions, Americans are carrying on schools, hospitals, farms and industrial plants in twenty-four Turkish cities. They maintain 450 schools of various grades and seven colleges, with numerous doctors and nurses in the nine hospitals conducted by the board. Dr. Alden R. Hoover of the International Hospital at Talas, Cesarea, who is now in America on furlough, is a believer in Turkey's future. He says that Turkey, geographically, commercially and agriculturally, is a rich country, but is undeveloped and bankrupt because its people have been kept ignorant, untrained and servile, and the deplorable sanitary and hygienic conditions existing are a consequence of this, resulting in a terrible waste of human life. He says the ravages of epidemic and endemic diseases are a constant menace to western countries through emigration, and there is a wonderful opportunity for modern medicine to regenerate the country. He sums up the specific needs as follows: Securing sanitary cities and villages; preventing ever-recurring epidemics of cholera, typhoid, typhus, etc.; lessening the high infant mortality; providing educated midwives and nurses; organizing child welfare to lessen the ravages of infectious diseases; stimulating domestic and personal hygiene and helping in the solution of the social evil.

Medical Reporters

A few minutes before being called upon to speak at a medical congress not long ago, I was approached by a reporter who asked for an account of my paper. My remonstrance that he could soon hear what was to be said to the assembly evoked the reply that he hadn't time for that and, besides, he wouldn't be able to understand if he had. Immediately after the meeting another reporter came up and asked me to explain the papers that had been read, and particularly what was meant by the terms "tissue," "cell," and "heart-beat," confessing frankly that he hadn't understood a word of what had been said. Clearly there is no reason to find fault with either of these men for their ignorance. They may have been quite competent in their regular work. They certainly had the virtues of frankness and of knowing their own limitations. It would be unreasonable to blame a reporter of sporting or police news for a lack of knowledge of radio-activity or experimental embryology, but what should we say of otherwise resourceful newspapers that send such men to report scientific news for a knowledge-craving and credulous public? That such subjects can be sensibly and accurately reported in the daily press is proved by the splendid record of the London *Times*, as shown, for instance, in its admirable reports of the last international medical congress. These reports have almost the accuracy that one would expect to find in official proceedings of the meetings. It is clear that the meetings were reported by experts, not only possessed of requisite knowledge, but also highly skilled in the art of writing. Here is an example worthy of emulation, and a splendid opportunity for some of our best papers to serve the public interest.—Ross G. Harrison, *Science*, Oct. 23, 1914.

Epidemic Outbreaks in Russian Factories.—In March and April, 1914, peculiar epidemics broke out in Russian factories, chiefly among the women rubber workers in factories for making goloshes. The trouble was characterized by sudden development, with headache, giddiness, lassitude, loss of consciousness and collapse. Nausea, vomiting and convulsions were also observed. In one factory about fifty women were affected on the same morning. On another day 102 women were thus affected and the floor was strewn with writhing, unconscious women. Some men who rushed in to help were also overcome. These women worked in large rooms, putting together the goloshes, the adhesive material used being gutta percha and resins dissolved in benzine. Two theories were advanced as to the causation of the epidemic, one being a chronic benzine poisoning among employees whose health had been depressed, many of such cases culminating at one time. The other theory was that it was due to dissatisfaction with working conditions, autosuggestion resulting in hysterical manifestations. The benzine poisoning theory was discounted when similar epidemics occurred in factories not using benzine, one occurring in a tobacco factory, and others in chocolate, wool, clothing and other factories. Professor Harbitz believes that the epidemics were largely determined by psychic factors, among employees affected by faulty sanitation and chronic ill health. In some cases the benzine may possibly have contributed.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 21-25.

Am. Assn. Gen.-Urin. Surgs., White Sulphur Springs, W. Va., May 18-20.
American Association of Immunologists, Washington, May 10.
American Dermatological Association, New York, May 13-15.
American Gastro-Enterological Association, Baltimore, May 10-11.
Amer. Gynecological Society, White Sulphur Springs, W. Va., May 18-20.
American Laryngological Association, Niagara Falls, June 1-3.
American Medico-Psychological Assn., Fortress Monroe, Va., May 11-14.
American Neurological Association, New York City, May 6-8.
American Orthopedic Association, Detroit, May 6-8.
American Otological Society, Niagara Falls, June 3-4.
American Pediatric Society, Lakewood, N. J., May 25-27
American Psychopathological Association, New York, May 5.
American Surgical Association, Rochester, Minn., June 9-11.
Arkansas Medical Society, Little Rock, May 3-6.
Association of American Physicians, Washington, May 11-12.
Conf. of State and Prov. Boards of North America, Washington, May 14.
Connecticut State Medical Society, Hartford, May 19-20.
Florida Medical Association, De Land, May 12-14.
Illinois State Medical Society, Springfield, May 19-20.
Iowa State Medical Society, Waterloo, May 12-14.
Kansas Medical Society, Kansas City, May 5-6.
Maine Medical Association, Poland Springs, June 9-10.
Maryland Medical and Chir. Faculty, Baltimore, April 27-29.
Massachusetts Medical Society, Boston, June 8-9.
Mississippi State Med. Association, Hattiesburg, May 11.
Missouri State Medical Association, St. Joseph, May 10-12.
Nat'l Assn. for the Study of Epilepsy, Old Point Comfort, Va., May 10.
Nebraska State Medical Association, Hastings, May 18-20.
New Hampshire Medical Society, Concord, May 19.
New York State Medical Society, Buffalo, April 27-29.
North Dakota State Medical Association, Bismarck, May 12-13.
Ohio State Medical Association, Cincinnati, May 4-6.
Oklahoma State Medical Association, Bartlesville, May 11-13.
Rhode Island Medical Society, Providence, June 3.
Texas State Medical Association, Ft. Worth, May 4-6.
West Virginia State Medical Association, Huntington, May 12-14.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

April, CXLIX, No. 4, pp. 469-624

1 *Histogenesis of Cancer of Stomach. W. C. MacCarty, Rochester, Minn.
2 Perforated Gastric and Duodenal Ulcer. G. G. Ross, Philadelphia.
3 *Case of Paroxysmal Tachycardia. W. L. Niles, New York.
4 *Effects of Exercise on Normal and Pathologic Heart. C. S. Williamson, Chicago.
5 *Dilatation of Arch of Aorta in Chronic Nephritis with Hypertension. W. H. Smith and A. R. Kilgore, Boston.
6 *Acrodermatitis Chronica Atrophicans. F. Wise and E. J. Snyder, New York.
7 *Sequence of Pathologic Changes in Acute Appendicitis and Appendicular Peritonitis. E. M. Stanton, Schenectady, N. Y.
8 Tuberculosis of Vulva. Report of Case. K. Bulkley, New York.
9 *Operation of Cranial Decompression. W. Sharpe, New York.
10 Fracture of Base of Skull with Escape of Cerebrospinal Fluid from Ear. Effect of Atropin and Epinephrin on Secretion. J. W. Moore, Louisville, Ky.

1. **Histogenesis of Cancer of Stomach.**—The histogenesis of cancer in the stomach, MacCarty says, bears an analogy to that in the breast, prostate and skin, with the one exception and the germinative stratum or focus has not been demonstrated, a condition which differs from primary epithelial hyperplasia in the organs just mentioned. In the production of these apparent stages of epithelial hyperplasia whatever the irritant or irritants are, be they extrinsic or intrinsic, there is an apparent attempt on the part of nature to reproduce the epithelial lining of the glands. In this attempt there is failure to completely differentiate the cells with the coincidental picture of secondary hyperplasia the cells of which differ from cancer cells only in position. From these facts it is clearly to be seen that the gastric cancer cell arises from intraglandular hyperplastic cells of the mucosa, and represents a malignant end-stage of a process of hyperplasia of normal cells.

3. **Paroxysmal Tachycardia.**—A case of paroxysmal tachycardia with the ventricular form of the venous pulse is reported by Niles. Strophanthin was administered many times during the attacks and they always ceased following it, usually in about one hour. On several occasions transitory fibrillation of the auricle terminated attacks. Finally, under the combined effect of digitalis and strophanthin permanent auricular fibrillation was induced and no more paroxysms have occurred. The case illustrates the close relation between paroxysmal tachycardia, auricular fibrillation, and auricular flutter. Strophanthin, in repeated doses if necessary, is recommended for prolonged attacks of paroxysmal tachycardia.

4. **Effects of Exercise on Heart.**—The teleroentgen method, Williamson states, offers a highly accurate and perfectly objective method of determining the size of the heart, eliminating completely any possible error due to varying heights of the diaphragm. The results of his experiments show that: (*a*) The normal heart responds to any exercise within its power by a diminution in size; (*b*) About one-half of the pathologic hearts, which are in good compensation, respond to exercise within their power, with a diminution in size; (*c*) Approximately one-half of the pathologic hearts, with manifest, but low-grade broken compensation, respond in the same manner by some degree of diminution in size. In only the most exceptional instances, if ever, are the differences in size due to acute dilatation, sufficient to be determined by even the most refined and subtle percussion. The Roentgen-ray examination of the heart, before and after appropriate exercise, is capable of rendering valuable assistance in the estimation of the functional efficiency of the heart.

5. **Dilatation of Arch of Aorta.**—The point of interest brought out by the cases cited by Smith and Kilgore is the frequency of dilatation of the arch under the age of 50 years in non-syphilitic conditions, especially in chronic nephritis with hypertension. In such cases there were no aortas below the upper limit of normal diameter (6 cm.); three aortas at the upper limit of normal, and eleven aortas definitely dilated. This dilatation may be quite marked—especially in the younger patients—in seven, or 50 per cent., of the cases the diameter measured from 7 to 9 cm., or 1 to 3 cm., above normal.

6. **Acrodermatitis Chronica Atrophicans.**—Acrodermatitis chronica atrophicans is described by Wise and Snyder as being a distinct clinical variety of diffuse, progressive, atrophying dermatitis, possessing certain characteristic and more or less constant features by means of which it may be differentiated from similar cutaneous pictures. These features are: (1) The presence of early inflammatory and infiltrating lesions, preceding or occurring together with atrophic changes; (2) The first evidences of the malady appearing usually on the hands and feet and progressing centripetally toward the trunk in an exceedingly slow and insidious manner; (3) The occurrence of the ulnar band or its analogue on the salf of the leg; (4) The relatively "immune area" below Poupart's ligament; (5) The anetodermia, most pronounced around the knees and elbows.

7. **Pathologic Changes in Appendicitis.**—During the course of his study Stanton has examined microscopically 539 appendices removed during or within ten days following an acute attack, and has studied the gross pathology as found at operation in more than 1,500 cases of appendicitis. In every instance the pathologic data has been classified especially with reference to the duration of the symptoms previous to the time of the observation of the pathologic conditions. As regards the appendicitis itself, the time was figured from the first onset of symptoms, while as regards the more extensive peritoneal involvements it was found necessary to determine not only the time of the beginning of the attack but also approximately the time of occurrence of any exacerbations of peritoneal symptoms.

Stanton emphasizes the following points: Acute appendicitis is even during the first day of the attack a diffuse inflammatory process involving all coats of the appendix. The destructive process in the appendix reaches its height on the second and third days of the disease. From the third day on the subsequent changes occurring in the appendix itself have chiefly to do with the repair of the damage done during the earlier periods of the attack. The diffuse inflammatory process involving the walls of the appendix is of such character that even without gross evidences of perforation the protection of the general peritoneal cavity from infection depends on the maintenance of the integrity of the fibrinous periappendicular adhesions rather than on the bacterial impermeability of the walls of the appendix itself.

Stanton's observations lead him to agree with Deaver, Moynihan, Ochsner and others when they state that clinical perforation would almost never occur if the general practitioner and the laity would appreciate the fact that in appendicitis "perforation spells purgation" and withhold cathartics during the early stages of suspected cases. If in cases of diffuse peritonitis the peritoneal surfaces are put at rest by withholding food and cathartics by mouth the sequence of subsequent changes occurring in the involved area represents a definite and essentially uniform process tending to the resolution of the lesion or the formation of definitely circumscribed abscesses. After the first thirty-six to forty-eight hours of a diffuse peritoneal infection the lesions encountered are of such a character as to be essentially undrainable and not well suited to surgical interference, a condition with continues until the period of localized abscess formation.

9. **Operation for Cranial Decompression.**—The operation of cranial decompression, Sharpe says, is one that should be used much more frequently than it is at present; especially is this true in the conditions of brain tumor, fracture of the skull, brain abscess and selected cases of spastic paralysis due to an intracranial hemorrhage at birth. The subtemporal method of cranial decompression is the ideal route; besides

being less difficult technically, it exposes an area of the brain most frequently involved. This permanent decompression opening does not weaken the skull, in that the thick overlying temporal muscles protect it most adequately, so that herniae cerebri are not be feared. The operative mortality is low. Patients with intracranial conditions should not be permitted to become blind or to reach the dangerous stage of medullary compression without a subtemporal decompression being performed early.

American Journal of Public Health, Boston

March, V, No. 3, pp. 183-279

11 Negro Health Problem in Southern Cities. W. F. Brunner, Savannah, Ga.
12 Negro Health Problem in Rural Communities. A. G. Fort, Atlanta, Ga.
13 Negro Health Problem. L. C. Allen, Hoschton, Ga.
14 Negro as Problem in Public Health Charity. L. Lee, Savannah, Ga.
15 Practical Remedial Measures for Improvement of Hygienic Conditions of Negroes in South. M. L. Graves, Galveston, Tex.
16 Syphilis Among Insane Negroes. S. S. Hindman, Milledgeville, Ga.
17 Relation of Public Health Nursing to Public Health Campaign. E. P. Crandall.
18 Federal Meat Inspection Service and Sanitation of Packing Houses Under Its Supervision. G. H. Shaw, Washington, D. C.
19 Modification of Ponder's Stain for Diphtheria. J. J. Kinyoun, Washington, D. C.

Annals of Surgery, Philadelphia

April, LXI, No. 4, pp. 385-512

20 Operative Treatment of Carcinoma of Esophagus. F. Torek, New York.
21 *Gastric and Duodenal Ulcer. C. H. Peck, New York.
22 Retroperitoneal Peforation of Duodenal Ulcer. Report of Case. G. Petren, Sweden.
23 *Occlusion of Pylorus. C. L. Gibson and F. Beekman, New York.
24 *Appendicular Obliteration. D. B. Pfeiffer, Philadelphia.
25 Major Procedure First in Two-Stage Operation for Relief of Cancer of Rectum. R. C. Coffey, Portland, Ore.
26 Painful Subcutaneous Tubercle. H. R. Owen, Philadelphia.
27 Typhoid Spine. Report of Four Cases. J. B. Carnett, Philadelphia.

21. **Gastric and Duodenal Ulcer.**—Peck reviews 120 cases of non-malignant ulcer of the stomach and duodenum. Of the 88 duodenal ulcers 71 were of the chronic indurated type and 17 were acute perforations. Of the 30 gastric ulcers, 17 were chronic non-perforative, and 13 acute perforations. In the duodenal group 83 per cent. were males, and in the gastric group 70 per cent. All of the 17 acute perforated duodenal ulcers occurred in males, the ages ranging from 23 to 52. Of the 13 acute perforated gastric ulcers, 9 were males and 4 females, the ages ranging from 23 to 49.

The 71 cases of chronic duodenal ulcer were verified by operation, and a posterior gastro-enterostomy was performed. In 44 the site of the ulcer was anterior, generally close to the pylorus; 19 were posterior, 2 multiple, 1 in the second portion of the duodenum, and in 5 the exact site was not stated. In addition to the gastro-enterostomy, when possible, especially in the ulcers situated on the anterior surface of the duodenum, the area was infolded by Lembert sutures, thus causing some degree of pyloric occlusion. In only one of the group was the von Eiselsberg unilateral exclusion performed about a year after the gastro-enterostomy. Three years later the patient was still having pain and occasional intestinal hemorrhages.

Hematemesis occurred in 13 patients; intestinal hemorrhage was also present in 10. Intestinal hemorrhage occurred in 11 additional cases—21 in all. In 30 patients it was definitely stated that no hemorrhage occurred, and in the remainder the history failed to state. Pain of a characteristic type, occurring from two to four hours after meals, relieved by food or alkalies, was noted in 24 patients. In 26 additional patients, pain while present, was irregular in occurrence. Vomiting at some time during the illness occurred in about half of the patients. Records of gastric analysis in 40 of the patients showed free hydrochloric acid below 40 in 20, between 40 and 60 in 13 and above 60 in 7. The total acidity corresponded fairly well to the percentage of free acid, six of the patients showing a total acidity above 90. In no case was absence of free hydrochloric acid noted. Of the seventy-one patients, sixty-five recovered and six died—a mortality of 8.4 per cent.

In the 19 cases of chronic gastric ulcer, gastro-enterostomy was performed in 12; partial gastrectomy in 3; excision of the ulcer without gastro-enterostomy in 2; cautery puncture with gastro-enterostomy in 1, and exploratory celiotomy in 1 patient. There were 3 deaths and a fourth patient returned to the hospital shortly after discharge with pneumonia, from which he died. Hematemesis had occurred in 10 patients; was absent in 7, and not mentioned in 3. Pain was a constant symptom, generally made worse by the ingestion of food; relieved by vomiting. Gastric analysis in 12 patients showed free HCl 40 or below, in 8 patients; 60 in 2 patients, and absent in 2 patients.

Of the 17 patients with acute perforated duodenal ulcer, 2 died before leaving the hospital, 1 of pneumonia on the seventeenth day after operation, and 1 after a secondary operation for subphrenic abscess twenty-two days after primary operation. Two others died shortly after leaving the hospital, 1 of pulmonary tuberculosis lighted up by the illness and operation, and 1 a few days after discharge, of hemorrhage from an ulcer situated on the inferior wall against the head of the pancreas.

In 4 patients simple closure of the ulcer without gastro-enterostomy was employed with 1 death; in 1, drainage of a large localized abscess, without suture; in 12, posterior gastro-enterostomy was done in addition to closure of the perforation, with 11 recoveries and 1 death (pneumonia on the seventeenth day). Of the 13 cases of perforated gastric ulcer, 7 patients recovered. Six patients died, all of peritonitis, 1 having pneumonia, 1 subphrenic abscess and pleurisy and 1 delirium tremens, in addition to the peritonitis. Four of the 6 were late operations from one to five days after perforation, with peritonitis already well developed. The other 2 were operated on twelve and thirteen hours, respectively, after perforation. Both had extensive leakage and peritonitis. Gastro-enterostomy was not performed in any of the fatal cases, but was done in addition to closure of the ulcer by suture in 5 of the 7 patients who recovered.

23. **Occlusion of Pylorus.**—For the border-line cases, when occlusion would seem to be indicated more as a matter of expediency than acute necessity, Gibson and Beekman recommend unreservedly the less severe measure, as constriction or infolding with sutures. Of the former method, they believe at present that the application of a free flap of fascia, when it can be applied, promises the best result. If, however, the adhesions around the pylorus are such that it would be inadvisable to separate them, they recommend that the constriction be produced by one of the methods of infolding with peritoneal sutures. The more radical procedures, such as the Eiselsberg unilateral exclusion, they would reserve for the severer lesions which call unquestionably for certainty of results. They feel, however, that even in these cases this particular operation will seldom be indicated, for, as general principle, these severer lesions would probably be better treated by resection, which in severity but little exceeds the unilateral exclusion. These recommendations are based on experimental studies on dogs.

24. **Appendicular Obliteration.**—It is pointed out by Pfeiffer after an analysis of 100 consecutive cases that appendicular sclerosis and its terminal stage, appendicular obliteration, differ pathologically and clinically from chronic active appendicitis. Three types of symptoms are to be considered: (*a*) Reflex, due to irritation of the nervous mechanism of the appendix; (*b*) Local, due to mesenteric and peritoneal contractions and inflammatory bands or adhesions affecting the appendix, cecum, ileum or ascending colon; (*c*) Consecutive symptoms, general and local, consequent on disturbed function of the ileocecal region. Simple appendectomy avails for reflex symptoms, but in local and consecutive symptoms only in so far as the operation permanently frees symptom-producing contractions, sclerosis or adhesions. The determination of these latter conditions and the appropriate treatment therefore awaits further observations and experience.

Cleveland Medical Journal

March, XIV, No. 3, pp. 177-252

28 Brain in Primitive Man. D. Black, Cleveland.
29 *Frequency of Duct-Like Spaces in Thymus; Formation and Fate of Hassall's Corpuscles. D. Marine, Cleveland.
30 Cytology of Cerebrospinal Fluid; Report of Six Hundred Cell Counts. O. P. Bigelow, Cleveland.
31 Inlay Bone Graft. W. G. Stern, Cleveland.
32 Precipitation of Serum Albumin and Glutin by Alkaloidal Reagents. P. J. Hanzlik, Cleveland.

29. **Frequency of Duct-Like Spaces in Thymus.**—Normal Hassall's corpuscles represent the atrophic and hyalinized remains of the embryologic thymic epithelial tubules and cords. Marine found that the frequency of atypical development of Hassall's corpuscles varies in different species of animals. In dogs duct-like epithelial lined spaces were present in 58 of 275 cases, or about 21 per cent. while in man they were present in one of 126 autopsies. In the sheep and chick the series is too small for percentage consideration. Starting with the embryonic epithelial tubules and cords, there is a considerable range of possible morphologic changes. Thus the solid cords may differentiate into tubules before the involutionary process starts, or the involutionary process may start before tubular formation takes place. In the latter case, which even in dogs is about 80 per cent. of all cases, typical Hassall's corpuscles are formed, while in the former, varying degrees of atypical Hassall's corpuscles are formed, depending on the extent of the tubular differentiation before involution begins.

Illinois Medical Journal, Chicago

March, XXVII, No. 3, pp. 177-256

33 After-Treatment of Laparotomy. C. E. Humiston, Chicago.
34 Traumatic Hernia, and Its Relation to Workmen's Compensation Act. R. R. Duff, Chicago.
35 Foot Ailments. F. S. Lower, Chicago.
36 Extra-Uterine Pregnancy. A. Hall, Mt. Vernon.
37 Important Anatomic and Physiologic Factors in Subarachnoid Medication. H. E. Santee, Chicago.
38 Technic for Preparation of Salvarsanized or Neosalvarsanized Serum and Its Intraspinal Administration. W. T. Mefford, Chicago.
39 Intraspinal Administration of Neosalvarsan, Using Patient's Own Spinal Fluid as Vehicle, Technic and Demonstration. G. W. Hall, Chicago.
40 Intracranial Treatment of Paretic Dementia. R. C. Hamill, Chicago.
41 Experience with Abderhalden Serodiagnosis in Pregnancy, Carcinoma and Nervous Diseases. J. F. Biehn, Chicago.
42 Injuries of Head. H. C. Mitchell, Carbondale.
43 Hyperflexion of Spine with Multiple Spinous Process Fractures Without Accompanying Lesions. O. F. Scott, Argo.
44 Treatment of Hypothyroidism. H. G. Hardt, Chicago.
45 Two Cases of Immediate Transplantation of Bone in Compound Comminuted Fractures of Tibia and Fibula; Broken Fragments were used for Transplants. F. Byrnes, Chicago.
46 Fistula in Ano. F. B. McCarty, Chicago.

Journal of Medical Research, Boston

March, XXXII, No. 1, pp. 1-200

47 *Arteritis Syphilitica Obliterans. S. T. Darling and H. C. Clark, Ancon, C. Z.
48 Fatty Degeneration of Intima of Arteries. O. Klotz, Pittsburgh.
49 Lipase Studies: I. On Ester—Splitting Faculty of Normal Tissues. C. Quinan.
50 *Id. II. Experimental Chloroform Necrosis of Liver. C. Quinan.
51 Experimental Production of Lesions, Erosions, and Acute Ulcers in Duodenal Mucosa of Dogs by Repeated Injections of Epinephrin. G. A. Friedman, New York.
52 *Studies in Anaphylaxis. XIII. Activation of Antibody by Cell. R. Weil, New York.
53 Studies on Basal Metabolism in Obesity and Pituitary Disease. J. H. Means, Boston.
54 *Incidence and Inheritability of Spontaneous Cancer in Mice. M. Slye, Chicago.

47. **Arteritis Syphilitica Obliterans.**—A pathologic report of six cases of complete occlusion of large arteries, aorta, carotid and subclavian in which syphilis was the causative factor is made by Darling and Clark. In four of the six cases there were very positive evidences of lesions definitely related to the occluded vessels. They occurred chiefly among the negroes in the third, fourth and fifth decades of life. The occlusion was due to an exaggeration of the intimal thickening seen in luetic aortitis, and all the cases were associated with luetic mesortitis, sometimes with aneurysm, and sclerosis of the myocardium and endocardium, conditions generally accepted as being of luetic origin. Three of the cases gave a positive Wassermann, one a positive history of treatment of syphilis, one a negative Wassermann, and one occurred before the test was in use.

From these observations it is seen: (*a*) That the left common carotid artery is the one most frequently occluded and this occurred not only when the carotid arose from the aorta directly, as it commonly does, but also when it arose from the innominate artery. Any other of the large arteries, even the abdominal aorta, may be the seat of occlusion. (*b*) The point of occlusion is most frequently located at the origin of the great vessel from the aorta. (*c*) While aneurysm is a frequent though by no means constant association in this condition, the occlusion of the vessel is not in any way due to the aneurysm being well separated from it, but to the luetic aortitis which underlies both conditions. (*d*) The conditions will be found to occur chiefly in persons suffering from syphilis.

50. **Experimental Chloroform Necrosis of Liver.**—Chloroform induces central necrosis of the liver in guinea pigs. The loss of the lipolytic ferment, per gram of the liver, after prolonged intoxication, may amount to nearly 38 per cent. Loss of the lipolytic ferment precedes the morphologic change that is known as necrosis. It is suggested by Quinan that chloroform disturbs the lipase balance of the tissues because: (*a*) In chloroform poisoning the liver substance shows an extensive loss of lipolytic activity per gram of substance. (*b*) The figures for the lipolytic activity of both the kidney and muscle tissues show, at the same time, a corresponding increase. Chloroform intoxication does not affect the autolytic activity of the liver cells.

52. **Activation of Antibody by Cell.**—When a guinea pig is passively sensitized by the action of an alien immune serum (rabbit versus horse serum), Weil says that two separate and distinct processes take place. First, the body cells appropriate and anchor the immune body, abstracting it from the circulatory blood. Second, the body cells produce an alteration, or activation, of the anchored antibody. This activation consists, 1, in a very much increased avidity of the antibody for antigen, and 2, in the acquired property of inducing a physiologic cellular response (such as muscular contraction in the case of the uterus) when the intracellular antibody is brought into contact with antigen. These changes occupy the so-called "latent period of passive sensitization." During this latent period the anchored antibody can, indeed, react with antigen, but the reaction induces no muscular contraction. When the cells have activated the anchored antibody, the latent period is concluded, and a muscular contraction characterizes the reaction of uterine antibody with antigen.

Cellular activation of antibody is therefore the basis of the anaphylactic reaction. Moreover, the increased avidity of cellular antibody constitutes a most important factor in the processes of immunity. Exactly the same conditions obtained in active anaphylaxis. The anchored antibody differs from circulating antibody in the possession of an increased avidity for antigen; moreover, it has the property of inducing a cellular response on uniting with antigen, a feature which is entirely lacking in the circulating antibody. Thus, the cell lends peculiar, and essential, characteristics to its antibody in active, as in passive anaphylaxis.

54. **Inheritability of Cancer in Mice.**—Slye believes that cancer is not transmitted as such, but rather as a tendency to occur from a given provocation, probably in the form of overirritation. The elimination as far as possible of all forms of overirritation to the tissues of an individual of high cancer ancestry should go far to eliminate the provocation of cancer; and the eugenic control of matings so that cancer shall at least not be potential in both sides of the hybrid cross ought to eventuate in a considerable decrease in the frequency of human cancer. An individual with poor normal growth has slow tumor growth. An individual whose growth processes are used in reproduction shows slow

tumor growth. An individual of good growth power whose normal growth processes are not being used shows rapid growth of neoplasms.

The clinical behavior of cancers in the laboratory is opposed to the theory of infection. Infection takes the weak individuals. Cancer selects the strong ones. Reduction of feeding and consequent lowering of resistance increases liability to infections; it lowers the cancer frequency. Vigorous growth processes are necessary for tumor growth. They militate against infections. A very slight infection will kill a pregnant female. Tumor growth is retarded by pregnancy. The results of Slye's experiments show cancer to be hereditary in the strict sense. The infections common among mice are no more liable to occur in one family than in any other if the individuals are separated from one another; whereas cancer crops out in cancer strains no matter where the mice are kept.

The infections common in Slye's laboratory spread not only through the cage, but to adjoining cages. The most careful and long continued experiments have failed to show a single case of transmission of cancer by contact in the same cage or in adjoining cages. If an infected mouse dies in a cage and is partly eaten before it is removed, every mouse in the cage is liable to be swept off by the same infection. Over and over again, the cancers of mice have been eaten by their mates or by mice placed with them as controls. Slye has never had a case of cancer in such mates as such controls. Portions of the cancer and of the viscera of dead cancerous mice have been systematically fed to control cages without a case of cancer in such controls. Cancer is a disease of middle and advanced age when the normal growth processes are confined to regeneration and reproduction. Infections are diseases of early life, when growth processes are largely accretions in quantity and in complexity.

Whether or not cancer shall eventually prove to be an infection, it has one profound difference from any infection known to man. It follows the laws of heredity with an inevitableness which makes it a character that can be manipulated. It can be bred into and out of strains at will. It can be put into a strain in which it has never existed before and it can be drawn out in extracted lines which can produce nothing else, and which in turn will carry cancer into any line with which they are hybridized; or it can be bred out of a line one side of which originally carried 100 per cent. of cancer.

Journal of Outdoor Life, New York

April, XII, No. 4, pp. 116-147

55 How To Escape Tuberculosis. E. O. Otis, Boston.
56 Negro Health Problem in Southern Cities. W. F. Brunner, Savannah, Ga.
57 Negro Antituberculosis Work in Atlanta. R. Lowe, Atlanta, Ga.
58 Education of Negro on Tuberculosis. W. A. Harris, Savannah, Ga.
59 Great Need of Hospital Facilities for Negroes with Tuberculosis. M. F. Sloan, Towson, Md.

Lancet-Clinic, Cincinnati

March 27, CXIII, No. 13, pp. 343-370

60 Syphilis of Joints. R. B. Cofield, Cincinnati.
61 Diagnosis and Management of Extrasystole Type of Cardiac Irregularities. M. A. Mortensen, Battle Creek, Mich.
62 Salvarsanized Serum in Treatment of Locomotor Ataxia, Paresis and Cerebrospinal Syphilis. W. Litterer, Nashville, Tenn.
63 Microdissection Studies on Physical Properties of Protoplasm. R. Chambers, Jr., Cincinnati.
64 Hospital Service in Turko-Balkan War. T. H. Wenning, Cincinnati.

April 3, No. 14, pp. 371-396

65 Certain Aspects of Life Underwriting. F. B. Mead, Fort Wayne, Ind.
66 Double Papillo-Edema—Optic Neuritis. R. Sattler, Cincinnati.
67 Emotional Factor in Psychoneuroses. L. Miller, Toledo.
68 Weak Foot; With Especial Reference to Treatment. W. B. Owen, Louisville, Ky.

Missouri State Medical Association Journal, St. Louis

April, XII, No. 4, pp. 145-196

69 *Intravenous and Intramuscular Administration of Diphtheria Antitoxin. B. S. Veeder, St. Louis.
70 Schick Reaction in Handling of Diphtheria Epidemics. E. E. Moody and M. C. Woodruff, St. Louis.
71 Chronic Gastritis. J. W. Ousley, Kansas City.
72 *Method of Surgical Treatment for Floating Kidney. W. Bartlett, St. Louis.
73 Treatment of Pneumonias. E. A. Dulin, Nevada.
74 Lodge Practice. J. W. Bolton, Warrensburg.
75 *Simple and Accurate Method for Estimation of Sugar in Blood. E. B. Knerr, Kansas City.

69. **Intravenous and Intramuscular Administration of Diphtheria Antitoxin.**—The following rules or regulations have been adopted at the St. Louis Children's Hospital for the administration of diphtheria antitoxin. They embody the practical applications of the ideas presented by Veeder as well as the results of clinical experience. All patients with clinical diphtheria receive antitoxin on admission regardless of whether or not a culture has been taken. In mild and moderately severe cases from 3,000 to 5,000 units are given intramuscularly. In all severe or septic cases, and in all cases with a laryngeal involvement, 5,000 units are given intravenously. All cases seen late (fourth day) are given the antitoxin intravenously if the membrane is at all extensive. Individuals exposed to diphtheria are given an intradermic diphtheria toxin test (Schick test). In case the toxin reaction is positive in twenty-four hours, 1,000 units of antitoxin are given subcutaneously in older children, and 500 units in children under 2 years.

72. **Surgical Treatment for Floating Kidney.**—The operative technic proposed by Bartlett is as follows: Make an incision which equally divides the angle formed by the last rib and erector spinae muscles; this should expose the fatty capsule. The fatty capsule is carefully stripped from the abdominal wall behind and the kidney lifted with it out of the abdominal cavity. An incision is made along the convexity of the organ, dividing fatty capsule and tunica propria. Both these structures adherent together are completely stripped back and inverted (in rare instances the tunica propria is adherent and must be left behind). This rather thick-walled bag is drawn by a few catgut sutures into a ball below the kidney pedicle and anchored with the same catgut strand to the interior of the abdominal muscles at a point just below the inferior angle of the laparotomy wound. Seventeen cases have been operated on by this method.

75. **Method for Estimation of Sugar in Blood.**—The method devised by Knerr requires no apparatus beyond a few test tubes, a centimeter pipet graduated to tenths c.c., a beaker, a centrifuge or funnel and filter paper; a 2 per cent. potassium oxalate solution, a 10 per cent. potassium carbonate solution, a 1 per cent. glucose solution, and some distilled water. Procedure: Two-tenths c.c. blood obtained by finger prick or otherwise is taken up in the 1 c.c. pipet (graduated to tenths) and transferred to a small test tube (1 by 10 cm. in size) in which had been placed previously about a half c.c. of the 2 per cent. potassium oxalate solution to prevent coagulation of the blood and lake it. The reagent and blood are carefully drawn in and out the pipet by suction to thoroughly mix them.

After mingling the blood and oxalate solution the pipet should be washed with a drop or two of water at a time and the washings added to the blood solution in the test tube until the volume reaches exactly the 1 c.c. mark. The picric acid reagent is now added to the 2.5 c.c. mark, a few drops at a time, and with shaking after each addition. The tube with its contents is centrifuged a minute or two, or if a centrifuge is not at hand the contents is filtered and exactly 1 c.c. of the clear yellow liquid is drawn up in the 1 c.c. pipet and transferred with washings of the pipet to a larger test tube (1.5 by 20 cm. is convenient) and evaporated by careful boiling to a few drops. To this concentrated liquid about a half c.c. of the 10 per cent. potassium carbonate solution is added and the liquid again evaporated by boiling to a few drops. If there is any sugar present this second boiling turns the liquid to a dark red or brown, depending on the amount of sugar. The tube is now stood against the table top and a centimeter scale placed alongside to mark the 10 cm. depth, and the solution diluted to this mark.

An exactly similar procedure is now performed on the 1 per cent. glucose solution taking 0.2 c.c. of this solution as

0.2 c.c. of blood had been employed. An empty tube also of the same dimensions as the other two is placed alongside of them held in the left hand. The three parallel tubes are now held with their curved bottoms immersed to a depth of a centimeter or two in clear water in a beaker in a good light. On looking down the tubes the empty tube will appear colorless, the one containing the blood solution will be faintly yellow, while the one containing the glucose will be of a much deeper yellow. The contents of the glucose tube is carefully poured into the empty one until the tint on looking down into the tubes exactly matches that of the blood tube. The depth in the third tube measured by the centimeter scale placed against its side will at once give the percentage of sugar, as each centimeter in depth represents $\frac{1}{10}$ per cent. sugar, the 1 per cent. glucose having been diluted to a depth of 10 cm. in the glucose tube.

Modern Hospital, St. Louis

April, IV, No. 4, pp. 227-294

76 Galloway Memorial Hospital of Nashville, Tenn. A. E. Clement and H. E. Hannaford, Cincinnati.
77 Dietary Routine in Massachusetts General Hospital. R. S. Eckman, Boston.
78 First Tax Payers' County Hospital. C. A. Boice and E. Finley, Washington, Iowa.
79 Fireless Cookers as Adjunct in Hospital Kitchen. F. A. Seely, Chicago.
80 Hurley Hospital—New Municipal Institution, Flint, Mich. A. M. Schill, Flint, Mich.
81 General Government of State Hospital. H. M. Hurd, Baltimore.
82 Insurance for Hospital—Varieties and Limitations. A. A. Johnson, New York.
83 Feeding Hospital—Various Kinds of Institutions. L. Graves, Cleveland.
84 Hospital Roentgen Ray Laboratory—Its Scope and Limitations. I. S. Hirsch, New York.

New Jersey Medical Society Journal, Orange

April, XII, No. 4, pp. 157-208

85 Efficiency in Practice of Medicine. E. J. G. Beardsley, Philadelphia.
86 Heredity as Influenced by Developmental Periods of Life. F. M. Crandall, New York.
87 Surgical Treatment of Gastric Duodenal Ulcer. L. Franklin, Jersey City.
88 Genito-Urinary Diagnosis. S. R. Woodruff, Bayonne.
89 Comparative Value of Systolic Pressure and Cardiovascular Load and Significance of Cardiovascular Load in Pneumonia and Chronic Myocarditis. S. A. Brown, New York.
90 Some Causes of Malocclusion of Permanent Teeth. R. A. Albray, Newark.

Oklahoma State Medical Association Journal, Muskogee

April, VII, No. 11, pp. 347-383

91 Congenital Atresia of Vagina; Report of Three Cases. H. P. Wilson, Wynnewood.
92 Uterine Fibroids. M. M. DeArman, Mangum.
93 Dementia Praecox. A. L. Stocks, Muskogee.
94 Uterine Carcinoma—Plea for Early Diagnosis. G. A. Wall, Tulsa.
95 Relation of Internist to Surgeon. H. M. Williams, Wellston.
96 New Method of Treating Accidental Wounds. J. A. Bowling, Alva.
97 Sciatica; Report of Unusual Case. R. L. Hull, Oklahoma City.
98 Decapitation; Report of Case and Technic of Operation. C. Doler, Stuart.

Ophthalmic Record, Chicago

March, XXIV, No. 3, pp. 109-162

99 Congenital Cataract. C. F. Clark, Columbus, O.
100 Report of Unusually Large Mucocele of Frontal and Ethmoidal Cells. Operation and Cure. W. C. Posey, Philadelphia.
101 Technic of Iridectomy, and Its Performance as Preliminary to Cataract Extraction. P. Smith, Birmingham, England.
102 Coffee Amblyopia and Its Relations to General Intoxication from Roasted Coffee Products. C. A. Wood, Chicago.
103 Case of Mixed Irregular Astigmatism Following Injury. R. S. Lamb, Washington, D. C.
104 Hydrophthalmos Following Trauma. Report of Case. H. H. McGuire, Winchester, Va.
105 Tonguing the Eye for Foreign Bodies — Cause; Pneumococcus Ulceration of Cornea—Effect. H. V. Würdemann, Seattle, Wash.
106 Electrolysis in Treatment of Trachoma and Its Sequelae. E. J. George, Chicago.
107 Case of Complete Bilateral Iridiremia in Child whose Father Has Bilateral Coloboma of Iris. A. C. Lewis, Memphis, Tenn.
108 Green Elevating Eye Speculum. A. S. Green and L. D. Green, San Francisco.
109 Report of Unusual Accident which Caused Loss of Eye. C. W. Kollock, Charleston, S. C.

Tennessee State Medical Association Journal, Nashville

March, VII, No. 2, pp. 443-478

110 Treatment of Surgical Tuberculosis. W. A. Bryan, Nashville.
111 *Acute Bacillary Ileocolitis. P. F. Barbour, Louisville, Ky.
112 Cholecystgastrostomy — Duodenal Ulcer — Uterine Fibroids and Pyloric Obstruction. R. A. Barr, Nashville.
113 Why Present Legislature Should Give Tennessee Better Medical Laws. D. L. Flanary, Dyersburg.
114 Prevention of Typhoid. N. C. Ellis, Friendsville.

111. **Acute Bacillary Ileocolitis.**—Having for many years tried bismuth in its various compounds, combined with salol or other antiseptic, Barbour abandoned the use of these agents and now administers purgatives to a child that is having a stool every hour. That stool, however, is not fecal; it is simply a lump of mucus more or less blood stained from the sigmoid and does not represent real fecal movement from the upper bowel. Whenever true feces appear in the stool, there will be some improvement in the condition of the child. A prescription which has proved helpful to him is as follows:

	gm. or c.c.	
Olei ricini.....4 or	8	ʒi-ʒii
Pulvis acaciae .....q. s.		
Syrupi rhei aromatici	30	ʒi
Misturae cretae.....q. s. ad	60	ʒii

M. Sig.: One teaspoonful every two hours until the stools are fecal, when it is given less frequently.

Mercuric chlorid in 1/128 of a grain or biniodid in the same dose will be given in alternative doses as long as there is blood in the stool, or fever. When convalescence is well established, bismuth with some of the organic tannic acid compounds is continued until the stools are firm. The food should be barley water, alternating with soups or jelly or buttermilk. As convalescence is advancing, skimmed milk may be added in small quantities to the barley water tentatively. It may be increased with tolerance; at the same time zwieback or Holland rusk gives some variety and zest to the broths. Fat should be withheld for some time, as the digestion of fats is notoriously bad after any severe diarrheal disorder.

Washington Medical Annals

March, XIV, No. 2, pp. 57-129

115 Present Conditions in Surgery. E. A. Balloch, Washington, D. C.
116 Cutaneous Sporotrichosis. C. A. Simpson, Washington, D. C.
117 Case of Syringomyelia. T. A. Williams, Washington, D. C.
118 Subconjunctival Injections of Salvarsanized Serum in Treatment of Ocular Diseases Due to Syphilis. R. S. Lamb, Washington, D. C.
119 Plea for Cancer Clinic. S. R. Karpeles, Washington, D. C.
120 Two Cases of Frontal Sinusitis and Killian Operation. C. W. Richardson, Washington, D. C.
121 Cancer of Skin. H. H. Hazen, Washington, D. C.
122 Case of Pituitary Disease Showing Both Acromegaly and Adiposis. T. A. Williams, Washington, D. C.

Wisconsin Medical Journal, Milwaukee

March, XIII, No. 10, pp. 583-620

123 Instruction in Sex Physiology and Hygiene. J. P. McMahon, Milwaukee.
124 Infections of Nose, Throat and Accessory Sinuses. Their Importance to General Practitioner. F. Pfister, Milwaukee.
125 Cardiac Accidents of Year's College Sports. W. S. Middleton, Madison.
126 Pilonidal Sinuses. W. L. Le Cron, Milwaukee.
127 Causes of Preventable Blindness. G. I. Hogue, Milwaukee.
128 Two Cases of Amebic Dysentery. M. A. McGarty, La Crosse.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

March 27, I, No. 2830, pp. 537-580

1 Treatment of Cranial Injuries of Warfare. P. Sargent and G. Holmes.
2 *Epidemic Cerebrospinal Fever: Place of Meningococcus in Its Etiology. E. C. Hort, C. E. Lakin and T. H. C. Benians.
3 Cerebrospinal Fever: Diagnosis and Treatment. M. Foster.
4 Local Anesthesia in Skin Grafting by Thiersch's Method. E. P. Gould and C. W. Archer.
5 Gas Gangrene and Tetanus. W. K. Hatch.
6 *Treatment of Painful "Frost-Bite." W. C. Davis.
7 Some Priori Pathometric Equations. R. Ross.

2. **Epidemic Cerebrospinal Fever.**—In cerebrospinal fever the authors have examined the urine of nineteen acute cases, the blood of fifteen patients, the cerebrospinal fluid of four patients and throat swabs from three patients. In the great majority of these they found, isolated, and as far as possible identified, especially from catheter specimens of urine, the gram-positive and gram-negative organisms of Jaeger at one time believed to be identical with the meningococcus of Weichselbaum. In addition to this organism, they also frequently found, in films of fresh urine, cerebrospinal fluid and blood (in order of frequency), gram-negative and gram-positive bacilli, both very small and large. Cultivation of this organism from the cerebrospinal fluid and from most of the specimens of blood failed. In two patients, however, a small gram-negative bacillus was isolated from the incubated citrated blood, and in a few cases from the urine.

In several of the urines, both in fresh catheter specimens and in incubated samples, considerable numbers of gram-negative diplococci were seen, often in clumps. They also occurred free in pairs and in tetrads. They mostly had flattened opposing surfaces, and were morphologically indistinguishable from meningococci or gonococci. In some of the films they varied from 0.1 to 0.4 micron in their greatest diameter. They were sometimes to be found in epithelial cells from the bladder and sometimes in clusters. In no case were any considerable number of pus cells seen. The diplococci could not be cultivated as persistent gram-negative organisms, but appeared to merge into Jaeger's organism, colonies of gram-positive and gram-negative rounded individuals alone surviving.

In all the specimens of urine examined in the fresh state, turbidity of varying degree was present. This turbidity was in no case due to pus cells, to blood, or to crystalline phosphates. A specimen of fresh turbid urine from an undoubted case with meningeal symptoms was passed through a tested Berkefeld filter, and a few loopfuls of the filtrate spread over the surface of an agar plate, proved to be sterile by previous incubation. Examined after four days, the plate showed a single colony. Films made from this colony showed gram-negative diplococci, morphologically indistinguishable from the meningococcus, also a few gram-positive forms; small gram-negative bacilli; gram-positive and gram-negative organisms morphologically similar to Jaeger's meningococcus; gram-negative rod-shaped organisms, with two to six gram-negative "granules" in its long axis at regular intervals, occasional gram-positive "granules" being sometimes seen. Each granule was composed of a diplococcus, with flattened opposed surfaces. In some the terminal diplococcus was detached, and was indistinguishable from the meningococcus of Weichselbaum. Gram-positive diplobacilli were seen which were sometimes unequal in size. The authors suggest the theory that the meningococcus is only a phase in the life history of the true infective agent in cerebrospinal fever, and urge to disinfect the urine of all known cases, and of all known carriers of Weichselbaum's meningococcus.

6. **Treatment of Painful Frost-Bite.**—The best remedy Davis has found to be cocain gr. viii, olive oil ʒiv, liquor calcis ʒiv, which simply means carron oil and cocain. A small quantity is rubbed into the feet twice daily, special attention being given to the toes; the feet are massaged with it for a few minutes, and afterward wrapped up in cotton-wool. It is an improvement to add 1 ounce of liquid paraffin to 4 ounces of carron oil, as by this addition it is prevented from oxidizing so quickly and also from drying up so rapidly, and makes it less liable to rancidity. When the oil dries on the feet, the following dusted on is an excellent powder: Camphor, gr. xxxv, zinc oxid and powdered starch, āā ʒss. In all recent cases in which there has been no ulceration this form of treatment has been entirely successful; one advantage is that the patient is able to sleep without a narcotic. When the acute stage passes off the carron oil and cocain are mixed with equal parts of phenol, the percentage of which is increased as the pain decreases.

Lancet, London

March 27, I, No. 4778, pp. 639-688

8 New Psychiatry. W. H. B. Stoddart.
9 *Typhoid and Paratyphoid Infection. G. Dreyer, E. W. A. Walker and A. G. Gibson.
10 *Case of Rupture of Heart in Child. J. Anderson.
11 Movements of Normal Stomach. H. Walsham and W. Overend.
12 *Certain Peculiar Crystals Found in Cerebrospinal Fluid from Case of Septic Meningitis. W. W. D. Thomson.
13 Bacteriology of Urinary Tract in Children. A. Ross.

9. **Typhoid and Paratyphoid Infection.**—In the method emphasized by the authors relatively large quantities of the suspected material are worked up for examination and isolated colonies of *Bacillus typhosus* or *Bacillus paratyphosus* (A) or (B) may be obtained within twelve to twenty-four hours by the use of a single plate. The method was devised by Dreyer and is based on the experience of numerous previous investigations on the biochemical action of actinic light. It consists in the subjection of an ordinary agar plate liberally spread with the bacterial emulsion to a graduated exposure to the rays of an arc light. The arc formed between silver electrodes has so far given the most satisfactory results.

The method has been tested on mixtures of *B. typhosus* and *B. coli* in the following proportions: 1 to 1, 1 to 10, 1 to 20, 1 to 30, 1 to 50, 1 to 80, 1 to 100, 1 to 150 and 1 to 200. In every case in which there were not more than 50 *B. coli* to each typhoid bacillus numerous isolated colonies of the latter were always found on some portion of the exposed area of the plate. Cases in which there were more than 50, but fewer than 200, *B. coli* to each *B. typhosus* a few colonies at any rate of the latter have almost always been discovered on the plate. In one experiment in which there were at least 500 *B. coli* to each *B. typhosus* a few isolated colonies of the latter were recovered. The colonies of *B. coli* on the exposed portion of the plate are well developed, whitish and opaque, while those of *B. typhosus* are tiny, dewdrop-like, and quite transparent after eighteen to twenty-four hours. From the latter streaks are made on the surface of plates of MacConkey's medium, Endo's medium and ordinary agar in the order named, with a once charged needle in order to confirm the diagnosis. The resulting growth is subsequently submitted to the usual tests.

10. **Rupture of Heart in Child.**—The patient, a girl of 5 years, was, as far as Anderson could learn, in good health up to the morning of her death. She was poorly nourished. About 9 a. m. on the morning of the child's death the woman in charge of her left the house, and the child was to stay in bed until she came back. On her return half an hour later she found the child had got out of bed and was sitting on the floor, looking ill and complaining of sickness. There was no history that the child had fallen out of bed. A little stimulant was administered, but there was no sign of improvement. The child expired on the way to the nearest police office. There was a history that eight weeks previously the child had had a fit, and a year ago she was in the parish hospital under treatment for eczema.

The pericardium was distended with fluid blood. A hemorrhagic area, 1 inch in length by ¾ inch in breadth, was noted on the anterior aspect of the heart along the line of the interventricular septum at its upper third, and also a small perforation within this area. The heart was removed and examined. It was normal in size, pale in color except at the hemorrhagic area. On opening the cavities a slight degree of dilatation was noted, but there was no hypertrophy of their walls except, perhaps, a small area in the left ventricle at the immediate apex, in which the muscular substance was altered in appearance, abnormally pale, and somewhat translucent. The columna carneae were unusually delicate and in places thread-like in character, and this condition was more noticeable in the case of the left ventricle.

The lesion which had given rise to the rupture was of remarkable character; a hematoma, ¼ inch in diameter, and formed in the wall of the left ventricle and septum at the place of discoloration above noted. Its cavity was filled with blood clot and its walls were ragged and granular. At

its lower aspect it had ruptured externally into the pericardium, and a large probe could easily be passed through the aperture, which was situated ½ inch from the base of the ventricle. The thinned inner wall communicated with the interior of the ventricle by a large and irregular aperture, which was continuous with an extensive rupture across the inner portion of the posterior wall of the chamber. The torn area almost encircled the ventricle, and reached as far as a point immediately beneath the position of the left auricular appendix. The laceration occupied a fair depth of the muscle, and the wall of the ventricle when viewed by transmitted light was quite translucent. The right ventricular wall was intact. The valves were of normal size and their curtains were healthy.

Examination of the coronary vessels showed a stenosis of the lumen of both arteries, and the descending branch of the left coronary artery was obliterated at the seat of the rupture and could not be traced beyond it. A small thrombus was present in the right coronary artery 1 inch from its origin. The venous sinus was dilated and immediately beyond the valve a large thrombus was found in the great vein.

12. **Crystals in Cerebrospinal Fluids.**—The crystals found by Thomson varied greatly in size, from 2 to 10 microns. They were elongated, somewhat rounded at the ends, colorless and transparent, and possessed a refractive index greater than that of the clove oil (1.53) in which they are mounted. Most of them contained a central nucleus or spot which appeared to have crystal outlines and sometimes gave the effect of zonal structure. There were also a few twin crystals. The crystals were strongly doubly refracting, and the extinction is straight which places them in either the tetragonal, hexagonal or rhombic system. These crystals were found to be soluble in dilute acids (organic and inorganic) and alkalies, and in acid spirit. They were insoluble in alcohol, ether, chloroform, acetone, or boiling water. They were unstained by Gram's method, eosin, methylene blue, carbolfuchsin, iodin, or collargol. No further crystals were yielded on evaporating down the supernatant fluid left after centrifugalization.

Sei-I-Kwai Medical Journal, Tokyo

March, XXXIV, No. 3, pp. 15-19

14 Researches on Electric Discharge of Isolated Electric Organ of Astrape (Japanese Electric Ray) by Means of Oscillograph. K. Fuji.
15 *Influence of Various Sugars on Action of Heart. K. Mizuno.
16 *Toxicity of Trypsin and Anaphylactic Symptoms Produced by It. F. Ishiwara.

15. **Influence of Various Sugars on Heart.**—Mizuno made experimental studies on the direct influence of lactose, fructose and cane sugar on the action of the heart by means of an apparatus which is a combination of the Langendorff's and Wohlgemuth's irrigation apparatus, with some modification. The animals used for the experiments were young dogs from the same litter grownup and eight to sixteen days old rabbits and tortoises. The isolated living hearts of the warm-blooded animals were irrigated with the Ringer's solution at the body temperature, to which the above mentioned sugars were added in various concentration, and which was saturated with oxygen. The tortoise's heart was irrigated with the same solution kept at 15 C. constantly. The influences of the various solutions on the hearts were noticed as regards the action and contraction of the heart and the duration of its action, etc., and registered.

The results obtained were as follows: 1. Fructose has the most favorable influences for all the hearts. The heart's action is energetic and the systole and diastole remain rhythmic for a long time. The cardiac strength and pulse frequency diminish very slowly and there are no rapid changes. In a concentration of 3 per cent. it shows a favorable influence, and in one of the isolated living hearts of a grownup rabbit the pulsation continued regularly for fourteen hours. The action of lactose on the heart is generally similar to that of the fructose, but even 0.1 per cent. solution causes in many cases a slight arrhythmia of the pulse and rapid weakness of the heart, with the consequent stoppage of the heart. The duration of the heart's beat is shorter as the concentration gets higher. Cane sugar has a stimulating and irritating action on the heart. The heart's action is for a time after the beginning of the irrigation very energetic, but soon becomes arrhythmic and frequent and its strength weakens quickly.

16. **Toxicity of Trypsin and Anaphylactic Symptoms Produced by It.**—Ishiwara states that when trypsin in neutral or weakly alkaline solution is injected intravenously in guinea pigs, the anaphylactic symptoms occur in about two-thirds of the cases. This poisonous action, however, appears to be not due to the ferment itself, as these actions remain still active even after the heating of the preparations which abolishes the ferment action as a rule. After thorough investigation Ishiwara asserts that the toxicity of the trypsin preparation is due to the presence of the diamo-acid which is present in the strength of 91 per cent. He also recommends the intravenous injection as the best way of applying trypsin in studying its toxicity.

Archives des Maladies du Cœur, etc., Paris

March-April, VIII, Nos. 3-4, pp. 45-102

17 *Angina Pectoris. (L'angine de poitrine.) H. Vaquez.

17. **Angina Pectoris.**—Vaquez devotes forty pages to the history and clinical features and forms of angina pectoris following overexertion and of the spontaneous type occurring during complete repose. The "exertion" and the "decubitus" types may be superposed, but when the latter occurs alone and there are no organic lesions in the heart or vessels, complete recovery is not exceptional. The trouble is merely a primary dilatation of the left heart when the heart has been "forced." Vaquez incriminates tobacco in the etiology less than others do, regarding it as liable to provoke an attack with hitherto latent organic trouble but not capable of inducing the latter. Huchard found a history of syphilis in thirty-five of 150 cases of angina pectoris and Vaquez in thirty of 100, and this before the Wassermann reaction was known. The pathologic lesion responsible for angina pectoris seems to be a characteristic aortitis just at the openings into the coronaries. The changes thus causing obstruction in the coronaries are typical of syphilis although they may be due to other causes.

Bulletin de l'Académie de Médecine, Paris

March 9, LXXIII, No. 10, pp. 313-332

18 Nervous Incontinence of Urine in War. (De l'incontinence d'urine et des psychoses vésicales chez les combattants.) P. Legueu.
19 *Factors which Determine the Primary Lesion in Tuberculosis. (L'erreur de Conheim et le determinisme du chancre tuberculeux.) A. Jousset.
20 Localization of Foreign Bodies in the Tissues. (Localisation des projectiles par le repéreur.) F. Mennet.
21 Serotherapy in Typhoid Fever. Remond and Minvielle.
22 Trophoneurotic Changes Main Factor in Trench Foot. (Les gelures consécutives au séjour prolongé dans les tranchées.) J. Parisot, P. Simonin and J. Glover. See Paris Letter, p. 1258.
23 Second Ossification Center Found in First Metacarpal and Metatarsal Bones in Prehistoric Skeletons. (Comment l'anatomie prehistorique permet de rectifier certaines données de l'anatomie actuelle.) M. Baudouin.

19. **The Primary Lesion in Tuberculosis.**—Jousset emphasizes that the physical properties, as well as the quantity and virulence of the inoculating virus, have a determining influence on the lesions which result. The amount, the viscosity, the minuteness of the particles, the homogeneity and the stability of the emulsion all have a share in influencing the outcome. He found that certain cultures producing pronounced lesions lost all their pathogenic properties after being ground fine in a mortar, thus breaking up the cohesion between the bacilli. This effect can be obtained also by slightly acidifying the culture. He comments on the surprising way in which the pathogenic properties of tubercle bacilli, hitherto deemed to be inherently specific, can be thus completely transformed or abolished by mere mechanical modification of the microbes.

Presse Médicale, Paris

March 11, XXIII, No. 10, pp. 73-80

24 *Six Months of Military Surgery. (Considérations sur quelques plaies de guerre après six mois de campagne.) R. Proust.
25 *Extra Fine Oiled Silk Applied to Burned Areas and Other Skin Wounds. (Le taffetas chiffon appliqué au pansement des brulures et des plaies cutanées.) P. Alglave.
26 Localization of Dropsy in Wounded Area. (Localisation d'un oedème brightique au niveau d'une lésion d'un nerf périphérique par coup de feu.) J. Heitz and S. I. de Jong.

March 18, No. 11, pp. 81-88

27 Persisting Pain After Wounds of the Median Nerve. P. Marie and Mme. A. Bénisty.
28 *The Collapse in Typhoid Fever. C. Aubertin and H. Chabanier.
29 Surgical Anatomy of the Leg. A. Broca.

24. **Impressions from Six Months of Military Surgery.**—Proust has served in various hospitals during the war, at the front, at the base and in the home zone, and thus has obtained a good general oversight of what is being done for the wounded. Since the day he has had an ample supply of antitetanus serum at his disposal not a case of tetanus has developed. He gives a preventive injection of 10 c.c. believing that every wound is necessarily infected in a tetanus-breeding region. Gas gangrene can be warded off if, within the first few hours after the injury, the wound is opened up widely, thoroughly dried and arrangements for effectual drainage provided.

25. **Oiled Chiffon in Treatment of Extensive Skin Wounds.**—Alglave has for some years been using for direct application to burns and other large skin wounds the "taffetas-chiffon" made like oiled silk only that the base is tarletan. The thinness, the flexibility and the softness of the surface render it peculiarly useful for aiding repair in the skin. There is no pain when the dressings are changed; the healing proceeds smoothly and regularly and the new forming skin does not stick to or grow into oiled silk as it does into gauze. The dressing should be removed each day and the surface left exposed to the air after it has been cleansed with boiled water. Air stimulates the epidermis to more active healing. He gives four illustrations of the excellent results of this method of treatment in a case of an extensive shell wound. The method is systematically applied to all the superficial wounds he now has to treat, and the results have surpassed all anticipations, especially with painful lesions, which bleed readily and have previously shown little tendency to heal.

28. **Collapse in Typhoid.**—Aubertin comments on the frequency of a tendency to heart failure in the soldiers with typhoid. Although young and strong, the vicissitudes of the campaign have exhausted them to such a degree that the typhoid attacks the cardiovascular system with special force. He gives the charts of a few cases, the blood pressure dropping below the recording power of the apparatus, while the pulse was uncountable. Epinephrin did not seem any more effectual in treatment than camphor, so that the suprarenals can not be altogether responsible for the collapse although, given in time, epinephrin sometimes seemed to ward off collapse. The ordinary heart stimulants and the application of heat brought these patients through; all the cases reported terminated in recovery.

Beiträge zur klinischen Chirurgie, Tübingen

XCVI, No. 1, pp. 1-180

30 Modern Firearms and Wounds. (Ueber Schusswaffen und Schusswunden im gegenwartigen Kriege.) P. v. Bruns.
31 Dumdum Bullets and Their Action. P. v. Bruns.
32 Impressions and Experiences at a Base Hospital in Moravia. F. Smoler.
33 Experimental Research on the Action of Pointed Bullets. (Wirkung der Spitzgeschosse.) E. Bircher.
34 Explosive Action of Bullets. (Sprengwirkung bei Kleinkaliberschusse.) Liebert.
35 Experiences of a Consultant Surgeon. L. Rehn.
36 Tardy Hemorrhages After Wounds in War. (Spätblutungen nach Schussverletzungen.) Schloessmann.
37 Wounds of the Lungs in War; Complications and Treatment. W. Hartert.
38 Osteoplastic Exposure of Brachial Plexus Below the Clavicle. (Osteoplastische Freilegung des Armnervengeflechts unterhalb des Schlüsselbeines.) Reich.
39 Localization of Bullets, etc., by Roentgen Rays. von Hofmeister.
40 Operative Removal of Bullets and Scraps of Shells, Especially with Aid of Electromagnet. (Operative Entfernung von Geschossen und Granatsplittern.) von Hofmeister.

Deutsche medizinische Wochenschrift, Berlin

January 14, XLI, No. 3, pp. 61-92

41 *War, Prostitution and Venereal Disease. (Krieg, Prostitution und Geschlechtskrankheiten.) A. Neisser.
42 Dysentery Among the Troops. (Zur Klinik der Kriegsruhr.) Soldin.
43 *Disturbance in Internal Secretion in Dysentery. H. Peiser.
44 Hydrogen Dioxid in Treatment of Wounds. (Verwendung des Wasserstoffsuperoxyds bei der Wundbehandlung.) E. Fraenkel.
45 Ultraviolet Rays in After-Treatment of Wounds. V. Hufnagel.
46 The Navy Medical Corps and Its Work. (Einiges aus dem Marine-Sanitätswesen.) Hoffmann. Commenced in No. 1.
47 *Disinfection of Passenger Cars. (Desinfektion der Eisenbahnpersonenwagen.) H. Hammerl.
48 Syphilitic Headache. (Syphilitische Kopfschmerz.) J. Hnatek.
49 Action and Absorption of Mercurial Preparations. Döhring.
50 The Test Inoculation of Guinea Pigs the Most Reliable Means for Revealing Tubercle Bacilli in the Blood. (Zum Tuberkelbazillennachweis im Blute.) O. Köhler.
51 Efficacy of Ichthyol in Treatment of Erysipelas. W. Lüth.

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52 Protection in Roentgenologic Work. (Schutzmittel für Aerzte und Personal bei der Arbeit mit Röntgenstrahlen.) H. E. Albers-Schönberg and K. J. A. Lorenz.
53 *Suggestions for Prophylaxis in Contagious Wards. (Hygienische Winke für Seuchenabteilungen.) P. Schmidt.
54 Agglutination by Syphilitic Serum. (Agglutination der Spirochaete pallida.) A. Kisameyer.
55 Underfed Infants. (Unterernährung von Säuglingen.) C. T. Noeggerath. Commenced in No. 10.
56 Inherited Syphilis at Freiburg. (Aus der Freiburger Kinderpraxis.) C. T. Noeggerath.
57 Detoxication of Diphtheria and Tetanus Toxins. J. Schumacher.
58 Tar in Treatment of Chronic Eczema. F. Thedering.
59 Jet of Ozone Deodorizes Cancer, etc. (Eine medizinische Verwendbarkeit des Ozons.) A. Wolff.
60 *Rabbit and Horse Meat. (Der Wert des Kaninchenfleisches für die Volksernährung.) E. Schottelius.
61 Wounds of Peripheral Nerves in War. M. Kirschner.
62 *Turpentine Exterminates Vermin. (Bekämpfung der Läuseplage im Felde.) T. von Marschalko.

41. **War, Prostitution and Venereal Diseases.**—Neisser says that those troops in the home zone and at the front who are liable to be exposed to venereal diseases are acquiring them to an extent which seems far beyond the numbers recorded in the war of 1870-1871. In that campaign, 33,528 men were given treatment for venereal disease. This represented 42.6 per thousand of the average force and 70.6 per thousand of the non-wounded given hospital treatment. The idea that abstention is injurious, he continues, should be vigorously combated. The so-called "necessity" is evoked by the opportunity. The pause deadens the libido. (*Die sogen. "Bedurfnis" stellt sich immer erst ein, wenn die verführerische Gelegenheit da ist. Bliebe die Truppe noch wochenlang in Feldstellung, kein Mann wurde an Geschlechtsverkehr denken.*)

He suggests a number of measures to reduce the danger of venereal disease, among them the compulsory treatment of every prostitute, regardless of whether she is known to have syphilis or not. An intravenous injection of salvarsan and some preparation of mercury once a week would materially and with the least possible inconvenience reduce the danger of infecting others. The individual would not be cured by this alone, but others would benefit. The men should be instructed with regard to the great danger which every intercourse with any prostitute brings with it. Their reason and patriotism should be appealed to. He agrees with Lesser that prophylactic means, that is, condoms, should be placed at the disposal of the men. Naturally, he adds, this proposal is repugnant to many on so-called ethical and moral grounds, but from the sanitary-hygienic point of view this is certainly the best and most promising measure. We must bear in mind that it is a question not only of the present health of the soldiers but of the prevention of all the misery for the family later connected with tabes, general paralysis and cardiovascular disease, as also the harm wrought by inherited syphilis in the offspring.

Neisser is convinced that the soldiers acquiring syphilis can and should be given a thorough course of treatment at their posts in the regiment, even when the troops are on the march. With acute gonorrhea the man will have to drop out

of the ranks for a few days of rest and treatment to abort the disease. When conditions render the danger of venereal infection especially imminent, systematically repeated physical examination of the men will reveal the non-reported cases of syphilis in the first stages.

43. **Disturbances in Internal Secretion with Dysentery.**—Peiser's report shows that dysentery is liable to be accompanied by excessive functioning of the thyroid-suprarenal group, overbalancing the pancreas-parathyroid group. The practical conclusion is that the vagotony thus revealed should be combatted with belladonna, and this proved decidedly effectual in his cases, especially when the dysentery was subsiding. In some patients a circular constriction of the small intestine could be palpated, above which the bowel was distended, causing discomfort and pain, all yielding to belladonna. This remedy also cured the pain from hypersecretion in the stomach, rebellious to opiates, in the course of dysentery, and in moderate doses caused the immediate cessation of salivation and gastric distress.

47. **Disinfection of Passenger Cars.**—Hammerl gives directions for the slaking lime-formaldehyd-sulphuric acid method which is proving extremely effectual for sterilization of all enclosed spaces, clothing, etc.

53. **Prophylaxis of Typhoid.**—Schmidt warns that the inoculation against typhoid should not render nurses and orderlies careless in regard to protecting themselves against typhoid. Special care must be taken against droplet infection when there is a typhoid angina or bronchitis. The vomit also is often swarming with typhoid bacilli. Certain typhoid patients eliminate unusual amounts of the bacilli in stools and urine while others eliminate very few. He advises a distinctive colored case-card for the former, constantly impressing on the attendants the necessity for specially protecting themselves against these *Massenausscheider*. Waterproof overgarments and aprons and easily sterilized overshoes should be worn while tending them.

60. **Rabbit and Horse Meat.**—Schottelius comments on the well-known fact that it takes more, proportionately, to feed small animals than large ones. The expense of raising rabbits for food is thus much greater than to raise a pig to produce the same amount of meat. The horses shot in battle are supplying quantities of good meat. They are killed under conditions similar to those of the chase, and the meat thus provided can be utilized to feed at least the many thousands of Asiatic prisoners of war, thus sparing other meats for the populace.

62. **Turpentine Exterminates Vermin.**—Marschalko writes from the dermatologic clinic at Koloszvar that seventeen years' experience has amply established the efficacy of purified turpentine oil, oleum terebinthinae rectificatum, in destroying lice and their eggs. It is best applied in the form of a spray, and destroys all kinds of vermin, even big roaches. The fumes also suffocate lice in time, even when quite diluted. The purified turpentine does not irritate the skin nor stain the clothing, while it evaporates so rapidly that it has no toxic action on man if there is sufficient ventilation. It is also cheap, and is not so inflammable as benzine. At his clinic the hair is sprayed with it and a flannel cloth dipped in it is tied over the head with a towel. In the morning the head is found free from live vermin, no matter how thick they were the day before. The turpentine spray has been found a satisfactory solution of the body-lice question in the trenches where it has been applied. It can also be used, incorporated to 50 or 65 per cent., in a salve. Even sheepskin can be cleared of vermin with the turpentine spray.

Münchener medizinische Wochenschrift, Munich

March 2, LXII, No. 9, pp. 289-320

63 *Knee-Elbow Position for Esophagoscopy. W. Sternberg.
64 Recent Decisions of the Tribunal of Honor. IV. P. Kaestner.
65 *Present Status of Treatment of Tabes and General Paralysis. (Das Problem der Therapie der syphilogenen Nervenkrankheiten im Lichte der neueren Forschungesergebnisse.) M. Nonne. Commenced in No. 7.
66 *Ultraviolet Rays in Treatment of Tetanus. (Lichtbehandlung des Tetanus.) A. Jesionek.
67 *Epidemic Hemeralopia in the Field. Braunschweig.
68 Increase in Eye Wounds over Those in Previous Wars. (Wichtige Kriegsverletzung der Augen.) C. H. Velhagen.
69 Field Latrines. (Feldaborte.) F. Siebert.
70 *The Hospital Train. (Bayer. Hilfslazarettszug Nr. 2.) W. Schneidt and Seitzinger.

March 9, No. 10, pp. 321-360

71 *Albumoses in Treatment of Typhoid. (Behandlung Abdominaltyphus mit intravenosen Injektionen von Albumosen.) H. Ludke.
72 Biologic Processes in Tuberculin Treatment. G. Bessau.
73 Tardy Pneumothorax After Wounds of the Lungs in War. (Pneumothorax im späteren Verlauf von im Kriege erlittenen Lungenverletzungen.) C. Bäumler. Commenced in No. 9.
74 The Food Supply and Beer Production. (Kriegsbereitschaft des Ernährungswesens und Biererzeugung.) M. v. Gruber.
75 Magnesium Sulphate Intravenously in Tetanus. W. Straub.
76 *Local Chilling in Treatment of Traumatic Epilepsy. (Zur Behandlung "traumatischer Epilepsie" nach Hirnschussverletzung.) W. Spielmeyer.
77 Tests of Insect Powder. (Insektenpulverwerthestimmung.) E. Lehmann.
78 Paper for Dressings. (Verwendbarkeit von Filtrierpapier und chinesischem Papier statt Mull als Verbandstoff.) M. zur Verth.
79 Importance of Early and Adequate Prothesis After Wounds of the Jaws. (Hilfe bei Kieferverletzten.) F. O. Walkhoff.
80 Wounds of the Ears. (Ohrbeschädigungen im Felde.) G. Krebs.
81 After-Treatment to Prevent Crippling. (Nachbehandlung der im Kriege verwundeten Heeresangehörigen.) W. E. Smitt.
82 *Sulphur to Ward Off Vermin. A. Eysell.
83 Advantages of the Open Treatment of Suppurating Wounds. (Eiternde Wunden.) Springer.
84 The Surgeon with the Cavalry. (Der truppenärztliche Dienst bei der Kavalleriedivision.) W. Blumenthal.
85 *House Flies as Carriers of Lice. (Stubenfliegen als Träger von Läusen.) Bohne.
86 Unfavorable Experiences with Scobitost. P. Rostock.

63. **Improved Technic for Esophagoscopy.**—Sternberg extols the superior advantages for both patient and physician when the patient takes the knee-elbow position on a table raised very high, the head extended over the edge of the table as far as possible. This combines the good points of the seated and dorsal positions without their discomfort and other drawbacks. It avoids danger of aspiration and of suffocation which are invited by esophagoscopy with the head hanging back. The secretions also flow out better, thus clearing the field for the esophagoscope. As there is so little discomfort or danger there is no need for haste, and no assistance is required. The esophagoscope slips in easily and the nose is left free as secretions do not run into it.

65. **Prophylaxis and Treatment of Tabes and General Paralysis.**—Nonne concludes this review of the present status of treatment of syphilogenous nervous affections with the statement that if tabes has been stationary for a long time and there are no special disturbances from it, treatment should be restricted to general measures to tone up the system. No special treatment for the syphilis should be given in advanced cases, but in early tabes a course of mercury should precede a course of salvarsan with mild dosage. The reactions in the blood and spinal cord are of no import as a guide to treatment; only the subjective symptoms should be regarded. If there is an acute exacerbation, specific treatment may be resumed, beginning with small doses. Otherwise a year should be allowed to lapse before repeating the course, and then only with small doses. The same applies to general paralysis, although the dosage with this should be still smaller and the course kept up a little longer. Tuberculin treatment of progressive paralysis has been followed by striking remissions in many instances, but whether any more than occur spontaneously is open to question.

The most important question in the field of syphilis at present is whether, with our salvarsan treatment during the first and second stages, we actually exterminate the causal germs or merely drive them back into remote fastnesses, particularly in the meninges. Time alone will answer this question, as we learn whether tabes and general paralysis become more frequent or less frequent among syphilitics treated with salvarsan during the first and second stages. This much Nonne has already learned, he says, from careful study of numbers of cases for three years, namely, that tabes can remain mild, that is, without showing any tendency to progress, even when the three reactions in the cerebrospinal fluid are still positive during the whole period. In general

paralysis, positive findings may coincide with a prolonged remission of symptoms, amounting practically to a complete cure. He has also learned that the pathologic reactions may persist as long as three years after the clinical cure of secondary syphilis. These pathologic findings may persist positive in this way even when the Wassermann reaction in the blood has veered to negative under treatment of the primary or secondary phase. It is important now to determine whether such cases are the rule or the exception. We must find out whether these persisting pathologic reactions in the fluid are premonitory of tabes or paralysis later. He remarks that bed rest for two days should always be enforced after a lumbar puncture. Otherwise there may be serious disturbances for days or even several weeks, as he has found by practical experience. The "provocatory" infusion of salvarsan he regards as too dangerous as its aim is to rouse dormant germs, and this is liable to interfere with tendency to spontaneous healing of the early syphilitic meningitis. Experiments on animals may reveal the true status and dangers or harmlessness of the provocatory injection. To date he has never attempted it.

Nonne has never known of a case of syphilis at any stage with all three reactions positive in which there were no manifest subjective or objective symptoms on the part of the nervous system. The increased numbers of cells, of globulin, and the positive Wassermann testify to meningitis. Dreyfus found the cerebrospinal fluid normal during early syphilis only in 22 per cent. but in later stages the reactions were negative in 70 per cent. showing the curability of this early meningitis. Fleischmann found the fluid normal in only 51 per cent. of 109 cases of recent secondary syphilis.

66. **Ultraviolet Rays in Treatment of Tetanus.**—Jesionek treated the wounds with the mercury vapor lamp in four cases of tetanus and the men recovered. The incubation period had ranged from nine to seventeen days.

67. **Night Blindness Among the Troops.**—Braunschweig comments on the curious coincidence that in the ninety-eight cases in his ophthalmologic service for the troops, 22 were cases of hemeralopia. No Bitot spots were discovered in any case, and he regards the condition as the result merely of physical exhaustion.

70. **The Hospital Train.**—Schneidt relates that the train in his charge has covered 14,000 kilometers—nearly 7,000 miles—since September, and he describes the work. He found that the wounds secreted more and that tetanus became much aggravated when the train was running fast, so that now the regulation speed of 30 kilometers, 19 miles, is maintained regularly. His experience has suggested as further desirable features of the equipment, arrangements for spraying the air, to clean it, as is done in theaters; arrangements for moistening the air, and a hot water douche for the personnel and the wounded able to use it.

71. **Albumose Treatment of Typhoid.**—Lüdke's research on immune serums for treatment of typhoid resulted in the discovery that certain other substances seemed to have the same action as a specific serum, when injected into a vein. This was most marked with albuminoids, and especially with deutero-albumose. He tabulates the course in twenty-two cases of typhoid after injection of 1 c.c. of killed cultures of colon bacilli or of 1 c.c. of a 2 or 4 per cent. solution of deutero-albumose. With the latter the fever dropped almost at once, and in more than half the cases the course of the disease was abbreviated and the organic lesions rapidly healed. The earlier the albumose injection was made, the better the results. In the eleven cases treated with the albumose alone, the fever subsided at once in five cases. It fell gradually to normal in five or seven days after the first injection, repeated once or twice during this period. None of the men had been inoculated against typhoid. The injections were begun the eighth to twenty-first day after beginning of the disease.

76. **Traumatic Epilepsy After Wounds of the Brain.**—Spielmeyer calls attention anew to Trendelenburg's research which demonstrated that cortical convulsions in dogs and monkeys could be arrested by chilling the area involved. Spielmeyer applied this principle in his practice in the last year in the case of a man with a defect in the skull who had frequent epileptiform seizures in addition to slight left hemiparesis. The seizures generally began with paresthesia in the hand. Spielmeyer ordered him to apply to the skull an ice bag, or cloths wrung out of cold water, keeping this up for half an hour once or twice a day. During the following nine months he had no further seizures except once when he had neglected the cold applications for two weeks, and the warning paresthesia came on in the street and it was impossible for him to get the ice bag. Before this the seizures had returned regularly every tenth to fourteenth day, and sometimes occurred in series. He now applies the cold whenever he feels the paresthesia and the seizure is warded off. Two men whose skulls were wounded by a shell, have had a similar experience. The seizures have been warded off by prompt chilling of the region whenever the sensory symptoms suggest that a seizure is impending.

82. **Vermin.**—Eysell recalls that the workers in the sulphur mines of Sicily are not liable to contract malaria in that hotbed of the disease. With the discovery that infection was conveyed by the mosquito, this "miracle" has been explained. The mosquito is repelled by the odor of sulphur. In itself sulphur has no odor, but, in contact with the secretions of the skin, sulphuretted hydrogen is generated in minute amounts, enough to repel insects. This fact has been utilized satisfactorily in warding off vermin among the soldiers. The underclothing is turned wrong side out and dusted with precipitated sulphur. It is brushed into the texture of the undergarments, using several tablespoonfuls. No effect is apparent until the sulphur has been worn for twenty-four hours. Then all vermin leave the bearer. The disinfecting action of the sulphur may have further a useful influence in warding off furuncles, etc.

85. **Lice on Flies.**—Bohne reports that when his hospital ship was tied up in the harbor last fall flies were numerous, and, on two occasions, when a fly had been killed as it was depositing its eggs, three or four lice crawled away from the dead fly. The flies were the ordinary house flies.

Therapeutische Monatshefte, Berlin

March, XXIX, No. 3, pp. 129-192

87 *Present Status of Medicinal Treatment of Children's Diseases. (Kinderkrankheiten.) M. Klotz.
88 Chemotherapy. (Erfolge der pharmazeutischen Chemie in der neueren Zeit.) E. Spröngerts.
89 Hormonal in Treatment of Constipation from Lead Poisoning. (Hormonalbehandlung der Bleiobstipation.) H. Curschmann.
90 *Dysentery. (Zur Behandlung der Kriegsruhr.) M. Soldin.
91 *Smallpox. (Zur Behandlung der Pocken.) Volland.
92 *Tetanus. (Behandlung des Tetanus mit subcutanen Injektionen von Magnesium sulfuricum.) F. Reingruber.
93 Results of Recent Researches Applied to Food Problem. (Neuere für die Physiologie und Pathologie der Ernahrung wichtige Forschungsergebnisse und deren Bedeutung für die Praxis.) H. Schaumann.
94 German Substitutes for Foreign Proprietaries. (Ausländische Spezialitäten und deutsche Ersatzpraparate.) S. Loewe and G. Lange.
95 *Therapeutic Notes from a Base Hospital. R. Koch.

87. **Drugs in Treatment of Children.**—Klotz comments on the complete failure of treatment of rachitis to date on the basis that it is the result of disturbances in some one internal secretion. Neither thyroid nor epinephrin treatment has displayed the least efficacy, nor hypophysis nor thymus extract. Of course if any treatment is begun just as the rachitis is spontaneously subsiding, "astonishing results" may be obtained with or rather in spite of the treatment. Calcium alone is equally ineffectual, but given with phosphorus and cod liver oil, the desired result is realized. Recent studies of the metabolism by Schloss indicate that the phosphorus can be dispensed with. The calcium can be given in the form of 1 or 1.5 gm. of calcium acetate (calc. acetic.) daily. Another field in which calcium is useful is in melena of the new born. Whatever the scientific explanation, the melena may be arrested by subcutaneous injection of 3 or 5 c.c. of a 5 per cent. solution of calcium chlorid ($CaCl_2$) with gelatin. Or serum or gelatin may be injected and calcium acetate (10 c.c. of a 5 per cent. solution) or calcium chlorid crystals (10 c.c. of a 10 per cent. solution) be given by the mouth

every two hours, lengthening the intervals after 3 gm. have thus been taken.

Klotz has never witnessed any benefit from calcium salts in prophylaxis or treatment of catarrhal affections or serum sickness. The main field for calcium treatment is in arresting a tendency to spasms and convulsions. From 8 to 15 gm. of the calcium chlorid must be given in the first twenty-four hours, and most of it during the first hours. With calcium acetate this dosage should be reduced one-third. The drug is then continued for three days, giving 1.5 gm. calcium chlorid or 1.25 calcium acetate six times a day, gradually reducing this until by about the tenth day 4 gm. is the daily dose, and this is kept up indefinitely. In case of a relapse, the course is begun anew with three of the initial doses and then five doses a day of 1.5 gm. of calcium chlorid or 1.25 of calcium acetate. The lactate does not act so reliably.

The spasmophilia is not cured; it is merely held in check by this treatment, and the ordinary measures, dietetic and sedative, must be given besides. Chloral by the rectum is required to arrest convulsions and laryngospasm until the influence of the calcium begins to be felt. The above course is not needed for mild spasmophilia; here 2 gm. of calcium bromid a day may be all that is necessary. Convulsions not due to spasmophilia, such as epileptic seizures, are not influenced by calcium treatment. It is possible that magnesium sulphate might answer as well as calcium; recent experiences suggest this possibility. The importance of salt as opposing the action of bromids is now generally recognized, and the way in which bromid intoxication can be controlled by giving more salt by the mouth or rectum.

90. **Dysentery.**—Soldin found that dietetic measures alone gave fully as good results as when associated with drugs, but he generally gave kaolin, bismuth or tannin when the cases became chronic. White cheese proved valuable in the diet after the first. It satisfied the hunger, and rendered the stools more solid. In 2.5 per cent. of his cases there was evidently intense intoxication and the men died within seven to seventeen days. The weakness of the heart dominated the clinical picture.

91. **Smallpox.**—Volland says that the only treatment of smallpox is to eradicate it from the land, which is easily possible by vaccination in infancy, repeated between 10 and 12, and again on entering the army. Any one who denounces this compulsory vaccination should be penalized. If systematically enforced, smallpox will be exterminated throughout the world—the only disease to date which offers such a possibility.

92. **Magnesium Sulphate in Tetanus.**—Reingruber tabulates the details of nine cases of tetanus in which recovery followed subcutaneous magnesium sulphate treatment. The article proceeds from Göppert's clinic at Göttingen and extols the subcutaneous technic for treatment of the moderately severe, long protracted cases. The magnesium sulphate will help to tide the patients along and permit the taking of nourishment until the system is able to throw off the disease. The best technic seemed to be to make the subcutaneous injections in the morning every two or three hours until the desired result was attained. Then the patient was left in peace the rest of the day. By the next morning the effect had worn off and the injections were resumed. He used a 20 or 25 per cent. solution for a child and a 40 or 50 per cent. solution for an adult. The single dose is 0.2 gm. per kilogram of the body weight, or even less.

95. **Tetanus.**—Koch emphasizes that the wounded do not develop tetanus because they have become infected with tetanus bacilli but because these bacilli are allowed an opportunity to proliferate in the wound. If with hydrogen dioxid and potassium permanganate we clear out the wound so there is no opportunity for them to develop, there will be no tetanus.

95. **Camphor in Treatment of Wounds.**—Koch extols the advantages of camphorated wine in treatment of wounds. The skin keeps its normal color, the granulations are large and lively and the wound heals remarkably fast, while the relief from pain from the first is notable. The official formula is 1 part camphor, 1 part alcohol, 3 parts mucilage of acacia and 45 parts white wine.

Therapie der Gegenwart, Berlin

March, LVI, No. 3, pp. 81-120

96 *Dietetics in Wartime. (Volksernahrung und Diätetik in Kriegszeiten.) A. Schmidt.
97 Intravenous Iodin Treatment. F. Klemperer.
98 *Synthetic Camphor in Therapeutics. M. Levy and W. Wolff.
99 *Kaolin-Charcoal Treatment of Diarrheic Processes. Wolff-Eisner.
100 *The Sugar Content of the Blood as Guide in Treatment of Diabetes. (Blutzuckerbestimmungen—Ivar Bangs Mikromethode—bei Diabetikern und ihre klinische Bedeutung.) M. Lauritzen. Commenced in No. 2.
101 Headache from Unsuspected Middle-Ear Disease. (Wesen und Grundlagen des Ohrenkopfschmerzes und seine Festellung durch die ärztliche Untersuchung.) A. Linck. Commenced in No. 2.
102 *Improved Technic for Knee-Jerk. (Einfacher Handgriff zur Auslosung des Patellarreflexes.) K. Gerson.

96. **Dietetics in Wartime.**—Schmidt remarks that the exigencies of wartime have caused a return to the diet of our grandparents, less meat and less albumin and more vegetables and fruits. This is a change that has long been advocated not only by the vegetarians but by many specialists in digestive disturbances. The war has forced this experiment on the whole German people and the profession is intensely interested in the ultimate effect. Will gout and nervous affections, arteriosclerosis and kidney disease be less prevalent—as the vegetarians claim—or not? At any rate the change will not harm those with a sound digestive apparatus. For those with a weak gastro-intestinal tract the question of a digestible diet under these circumstances is a question of cooking. Cooking, he declares, is a lost art in the homes of working people, and it is at a very low level everywhere. Even for the sick, the digestibility usually depends more on the way in which the food is prepared than on the substance itself. He says it must be hammered into the women that it is now their duty to stand by the cook stove and take time to prepare the savory and digestible dishes of our grandparents who did not have meat, eggs and butter in the abundance to which we have become accustomed.

98. **Synthetic Camphor.**—The experiences related in this communication from His' clinic at Berlin testify that synthetic camphor can fully take the place of natural camphor. Only, when the dose is over 1 gm., it is wise to be a little more cautious than is necessary with the natural drug.

99. **Kaolin and Charcoal in Diarrhea.**—Eisner declares that bolus alba (kaolin), which Stumpf has been for years advocating as the best treatment for cholera, has come out triumphant from the experiences in the present war. It seems to act by absorbing the toxins and mechanically burying the bacteria and sweeping them away with it. Blood charcoal answers the same purpose, and the two can be given together. The details of twenty-five cases are tabulated showing the almost immediate arrest of violent and rebellious diarrhea in dysentery and typhoid after the dose of a tablespoonful each of the kaolin and charcoal had been taken once to three times a day. In the severer cases the proportion of kaolin was doubled. It is a familiar fact that charcoal and *Kieselgur* (fossil earth) will decolor a solution of a stain. We utilize this property in treating intestinal trouble with them. He adds that if we accept Hofmeister's definition that all the phenomena of immunity are due to colloid-chemical interactions, then we can regard the kaolin-charcoal treatment as a kind of immunotherapy, and as a new and particularly promising form of it. At the very first trial of it we are able to bind toxins which are beyond the reach of serotherapy, and thus we can materially reduce the death rate in cholera. Eisner remarks that it is not easy to find anything more harmless than this method of treatment. He gives the kaolin and charcoal in oatmeal gruel with a dash of red wine. It has to be stirred constantly to keep them from settling to the bottom. The method was applied further with apparent success to some healthy carriers. No bacilli were found in their stools afterward.

100. **Sugar Content of the Blood in Diabetes.**—Lauritzen tabulates here the findings with Bang's micromethod for determining the proportion of sugar in the blood as applied

systematically and repeatedly in one hundred cases of diabetes. The variations in the sugar content of the blood are a more reliable guide to treatment than the sugar content of the urine, he asserts.

102. **The Knee-Jerk.**—Gerson gives an illustration to show the method and advantages of passing your left arm under the patient's right thigh just above the knee, resting your hand on the man's other thigh. His leg thus rests on your forearm and you can tell whether the muscles are relaxed or not, before testing for the knee-jerk. The leg should be bare.

Zentralblatt für Gynäkologie, Leipzig

March 13, XXXIX, No. 11, pp. 161-176

103 Improved Technic for Sterilization by Extraperitoneal Displacement of Fallopian Tubes. W. Stoeckel.

Gazzetta degli Ospedali e delle Cliniche, Milan

March 11, XXXVI, No. 20, pp. 305-320

104 *Pleurisy in Syphilitics. B. Vasoin.
105 Antibodies to Cow's Milk in Infants' Blood. (Allattamento artificiale e fermenti nel sangue per l'albumina del latte eterologo.) L. Maccone.

March 14, No. 21, pp. 321-336

106 *Liver Abscess and Valvular Trouble Secondary to Enteritis. C. Pascale.

104. **Pleurisy in Syphilitics.**—Vasoin concludes from study of the literature that tuberculous pleurisy is rather frequent in syphilitics, but that there is no evidence to date of a pleuritis of exclusively syphilitic origin. If the Wassermann reaction were positive in the pleural effusion alone, and not in the blood, this would settle the question in the affirmative, but there is no record of such findings. We must also be on the lookout for cases in which syphilitic symptoms develop simultaneously in the skin and the pleura without previous symptoms of tuberculosis.

106. **Liver Abscess with Heart Disease.**—Pascale reports a case in which during a catarrhal enteritis an abscess developed in the liver. During the acute course of the liver trouble, cyanosis and dyspnea testified that a mild, long latent heart trouble had been fanned into a flame likewise by the bowel disease. The failing compensation of the heart trouble forbade operative treatment of the liver abscess and the woman soon succumbed.

Policlinico, Rome

March 14, XXII, No. 11, pp. 351-384

107 Open Iodin Treatment of Operative Wounds. (Sul trattamento aperto delle ferite operatorie con la tintura di iodio.) M. Pezzolo.

Riforma Medica, Naples

March 13, XXX, No. 11, pp. 281-308

108 Tubercle Bacilli Only Exceptionally in Blood in Chronic Tuberculosis. (Sulla batteriemia tubercolare.) T. Lucciarini. Commenced in No. 10.
109 Clinical Significance of Eye-Heart Reflex. (Riflesso oculocardiaco.) N. Orlandi. Commenced in No. 9.

Semana Medica, Buenos Aires

February 4, XXII, No. 5, pp. 145-180

110 Salvarsan in Treatment of Syphilis. J. N. Posadas.
111 The Campaign against Alcohol in Latin America. (Progresos en la republica de Chile.) V. Delfino.

February 11, No. 6, pp. 181-212

112 Technic for Electric Treatment of the Eye. (Soporte universal para aplicaciones electricas en los ojos.) C. Heuser.
113 Present Conception of Hysteria. (Histeria-pitiatismo.) J. Babinski.

February 18, No. 7, pp. 213-240

114 Operation for Diverticulum in the Bladder. C. V. Zerbini.
115 Serotherapy of Typhoid Fever. (Los estragos del tifus.) A. D'Alessandro.
116 Amebic Dysentery in Uruguay. A. Ricaldoni and A. Berta.

Grèce Médicale, Athens

February, XVII, Nos. 3-4, pp. 5-8

117 *Tuberculosis of the Kidney. P. Petridis. Commenced in No. 1.

117. **Tuberculosis of the Kidney.**—Petridis concludes from his own clinical experience and review of the literature since 1912 that we can assume with practical certainty that only one kidney is affected in most cases. Early diagnosis is still a difficult matter, even with all the aids of modern science. There is only one method of treatment, namely, removal of the diseased organ. If the condition does not permit this, nephrostomy may be indicated, followed by nephrectomy when the condition has improved enough to allow it.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

March 13, I, No. 11, pp. 805-880

118 *Test for Bile Pigment in Various Body Fluids. (Studien over anhepatische galkleurstofvorming.) A. A. H. van den Bergh and Others.
119 The Coolidge Roentgen Tube. (Over een nieuwe roentgenbuis.) J. W. T. Lichtenbelt and W. H. Jolles.
120 Radium and Roentgen Treatment of Non-Malignant Gynecologic Disease. (Stralenbehandeling in de gynaekologie. II.) T. H. Van de Velde.

118. **Determination of Bile Pigment in Body Fluids.**—Van den Bergh describes an acetone technic with which it is possible to crystallize out any bilirubin that may be present in the blood serum, effusions and transudates.

Hospitalstidende, Copenhagen

March 17, LVIII, No. 11, pp. 249-280

121 *Gall-Stones Result of Transient Inspissation of the Bile. (Studier over Galdestenenes Patogenese.) T. Rovsing.

121. **Gallstones Result of Transient Thickening of the Bile.**—Rovsing asserts that recent research seems to have established that, just as the urine becomes abnormally concentrated during the course of a febrile disease, the bile is liable to become less fluid. In the inspissated bile, precipitation is liable to occur and the elements thus thrown down may agglomerate into concrements. Among the facts on which he bases this assertion are the results of Boysen's chemical study of the gallstones found in 200 cadavers with cholelithiasis. The young, freshly deposited gallstones and likewise the nucleus of all other kinds of biliary concrements he found consisted of bile pigment and calcium, *Pigmentkalk*, as he calls it. Other elements of the bile are precipitated on this nucleus or are drawn in by osmosis, especially cholesterin. The conditions during pregnancy and during a febrile disease are liable to favor this inspissation. The concrements resulting from it are all of about the same age, confirming the transient nature of the cause producing them and explaining why new ones do not develop after the crop has been removed. Boysen found invariably that the gallbladder was sound when the gallstones were of the small, primary bile-pigment calcium type.

A still more conclusive argument in favor of this assumption of the origin of gallstones, is that systematic bacteriologic study of the gallbladders removed in 320 cases at Rovsing's clinic between 1899 and 1914 showed that the organ was entirely sterile in fully 54 per cent., without a trace of infectious processes. The proportion in aseptic cases showing the different types of gallstones ranged from 52.7 per cent. of 55 cases in which a single large stone was found to 77 per cent. of 27 presenting the small mulberry-shaped stones. These findings demolish entirely Naunyn's theory that gallstones are deposited in consequence of an infectious process. Other data cited also disprove this, especially the fact that the symptoms of cholecystitis always follow, never precede, the gallstone formation. When the pigment and calcium are precipitated from abnormally thick bile, the resulting concrements may or may not irritate the gallbladder and ducts enough to set up inflammation. Rovsing reviews all the theories proposed concerning the pathogenesis of gallstones and shows the fallacies of each, while he expatiates on the way in which all the phenomena connected with choleliathiasis are logically explained by precipitation as the result of thickening of the bile under some temporary condition inducing transient inspissation.

Ugeskrift for Læger, Copenhagen

March 18, LXXVII, No. 11, pp. 393-428

122 Binet-Simon Intelligence Tests for Children. (Intelligensundersøgelser hos Børn.) Fischer-Nielsen. Commenced in No. 10.
123 Erysipelas Yields to Diphtheria Antitoxin. C. Berg-Hansen.